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TO IMPROVE THE SOIL AND THE MIND.

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Editorial Notes in England.

ALDERMAN MECCHI'S FARMING.

Fifteen or twenty years ago, a successful London tradesman, or *merchant*, as in such a business he would have been called by us,—“having some spare capital,” resolved, with that taste for agricultural pursuits which forms a distinguishing feature in the English character, to invest his money in land. He purchased 260 acres. It was not the best of land. It was not in the best condition. “Almost surrounded by barren heath,” the owner found the general opinion around him in Essex, to be that his purchase “could never be improved, even to become of tolerable goodness.” He has since told the story of his expenditures, from different parts of which I am quoting these expressions. The principal adaptation of his soil was to retain the water that fell upon it from heaven and rose beneath it in hidden springs; and this retention was so admirably accomplished that the strong yellow loam subsoil which constituted a large part of it, was constantly in a state varying “between putty and bird lime, according to the season.”

Under such circumstances, Mr. MECCHI, for it will be already understood who I am talking about, did that most difficult of all things for a man to do—judging by the action of a great many, both here and in America, who have *too much land to cultivate it well*. He sold one-half, and determined that, be the obstacles what they might, he would improve the remainder.

Since 1843, when these steps were decided upon and improvements commenced, he has made some little addition to the farm, so that it now contains 170 instead of 130 acres. I visited Tiptree Hall the last day of June, and saw so much more that seemed to me of real, practical value, than I had been led to anticipate, that I hope what I can say here will not entirely fail to convey some of the lessons which Mr. MECCHI has been endeavoring to teach. At the same time let me disclaim the anticipation of presenting anything like a perfect detail of his opera-

tions—a task which, so far as I know, remains to be performed. For the “Sayings and Doings” of the Alderman, consist of his scattered writings from time to time, unavoidably containing more or less repetition; representing, too, in some degree his changes of views with additional experience, but lacking in the connectedness that would render these changes features of still greater value in the progress of a perfectly relevant and straight-forward tale.

“I may be asked,” says Mr. MECCHI, “What can you, as a Londoner, know about farming?” I will answer, “I always loved the beauties of nature, the pure air of heaven, the sports of the field, and the hospitality of our honest yeomen. I have seen one farmer making a fortune, and his next neighbor losing one. I have seen one field all corn, and another nearly all weeds.”

“I asked, ‘How is this?’—inquired into the causes—noted the results—obtained from all the best farmers, and all the best agricultural books within my reach, every information bearing on agricultural pursuits, and practiced in my own little garden, on a small scale, a variety of experiments.”

Carrying forward upon his new property these experiments—agitating continually the necessity of certain improvements—if not in his own way, by some other means—of which he thought English farming peculiarly capable,—his sentiments have progressed through different stages of ridicule and hostility until it is now commonly granted that while very few may wish to proceed upon his system exactly, he has yet done a good work in stirring up the many to direct measures of advancement. He has certainly been most liberal in the expenditure of his money in such a way as to test how far others may venture safely; and he has presented an example which in notoriety as well as from its intrinsic merits, must have been exceedingly effective. Moreover, as it was remarked to me in conversation by a large farmer in one of the midland counties, his efforts have opened the door to him of associations which in England money does not buy. Mr. MECCHI, the widely-advertised vender of razors and razor-strops—Mr. MECCHI, the wealthy Alderman, might have gone down to the grave with other dealers in fancy wares and consumers of turtle soup, but Mr. MECCHI, the farmer of Tiptree Hall, is invited to Sir ROBERT PEEL’S, with lords “of high degree,” and comes to be looked upon, as he mournfully says himself, in bewailing the responsibilities and “miseries” of the position—in the light of “a public improver.”*

* After speaking of the thousand questions with which eager inquirers prey upon his time, and of the resort to him by inventors without number for the means of introducing their schemes, he adds as a set-off, in the “consciousness of having been of some service” to his country, the “pleasing recollection that the two American Reapers were first tried” on his farm, in 1851. “Then they were wondered at; now Messrs. Burgess & Key alone are preparing to make fifteen hundred for use in 1859.”

About Feeding Cattle.

"The quantity of meat made on a farm per acre, determines the quantity of corn grown."

"Mr. LAWES has shown beyond a doubt that there is no way of obtaining manure so cheaply as by feeding animals."

It chanced that Mr. M. was not himself at home, but I found the steward or bailiff, Mr. DRANE, an intelligent and communicative man. The first turn we took, very appropriately—because the feeding of animals is entitled to a front rank among the improvements we must more extensively practice, and because while many of the most peculiar, and to some obnoxious features in Mr. M.'s system here meet the visitor at once, he may also learn in what he sees, the general importance of careful management, the economical use of feeding materials, the benefit of comfortable quarters, and probably the strongest arguments that can be advanced, in favor of stall feeding in summer as well as winter.

The building which we now enter is of sufficient width for one row of stalls or boxes, and an alley in front of them from which to feed. The size of the boxes is nine feet nine inches inside breadth, and eight feet length, exclusive of the manger—each designed for two bullocks.—The manger is a simple box or trough, and receives all the food the cattle eat. So far there is nothing extraordinary in what we see, but the floor is certainly a surprise! It is composed of *slats* of good sound deal or other timber, three inches by two in size and two or two and a half inches apart. The animal has no bedding of any kind.—"There is nothing pleasing to the grazier's eye," as Mr. M. remarks, in such an arrangement. Indeed, like others, he had at first many prejudices against it. Both men and animals like a soft place to sleep on. When bullocks are first put into these boxes, they seem "afraid to move," and for twenty-four hours, nine out of ten "resolutely maintained their standing." Just a forkful of straw, however, spread about under them, seemed to overcome this "sense of insecurity," and they only required one resort to this expedient. Physicians tell us, reasons our host—that a hard bed is undoubtedly the most healthy. In this case the edges of the boards, at first new and sharp, in two or three weeks become smooth, and the animals find easy positions. This floor is, I think, perfectly horizontal and the slats placed, not across the box, but longitudinally as the animal stands. They are also used, however, and with results represented as similarly satisfactory, both for pigs and sheep. Mr. Huxtable is the author of the boarded floor system, but Mr. Mechi has modified the details, and, after trial and measurements of the hoofs of various animals, has concluded upon the following as the best size of slats:

For bullocks, 3 inches thick, 4 inches wide, 1½ inches apart.				
For sheep and pigs, 1½ do. 3 do 1¼ do	3	do	1¼	do
For lambs & small pigs, 1½ do 3 do 1 do	3	do	1	do
For calves, 2 do. 3 do 1½ do	3	do	1½	do

The result of putting two bullocks together is not found to retard their progress in flesh-making—the better ox, as elsewhere, will be the master, but not to the injury or discomfort of his associate. They are all groomed daily by a boy—a process which appears to contribute much to their enjoyment. The floor, although not swept, is always clean; a little gypsum (plaster) is sprinkled over it every morning—about a peck to ten bullocks.

Economy in Saving the Litter.

The great advantage claimed by this system, aside from the assertion that it actually contributes to better the health of the animal and the quality of its beef—is the saving both of the bedding and of the labor that accompanies its distribution, removal, and the subsequent management of the manure, of which last we will speak by and by. All the straw is wanted for feed. As Mr. HORSFALL argued when I visited his place, the straw when used for litter is only of value as a contribution to the manure heap; when it is fed to the animal, those parts which in the dung-pit would ferment and escape, are precisely the ones which the animal converts into its own tissue, while the mineral elements which it does not make use of, remain for fertilizing purposes as before. Now the value of straw simply as manure, is computed by Mr. Mechi to be not above \$2.33



PORTRAIT OF MR. MECI.

per ton, (9s. 4d.) while for feed it is worth to him \$5, or more than double as much. This difference is one which he does not think he can afford to lose, for he calculates upon a production of two tons of straw per acre, and a loss of, say \$5 per acre, on fifty acres of wheat, will go a good way toward the difference between farming at a profit and farming at a loss.

The pains taken to illustrate and verify these facts, show to what economical minuteness, so to speak, the English farmer has been compelled to go in order to sustain the gainfulness of his calling under those numerous expenses with which he is burdened by government, church and landlord, and notwithstanding which he has accomplished the grand triumph of so far competing successfully with all the rest of the world—the cheap labor of the continent and the cheap lands of America. With us, where we have difficulty to bring our farmers into the way of converting their straw into manure, to go beyond this use into a calculation of its further value as food, seems almost a waste of words. But such will not always remain the case where it is so at present, and the subject may not be universally disregarded even now. From Voelker's analyses, alluded to by Mr. M., he derives the statement that the soluble fattening substances contained in each 100 lbs. of straw are equal to 18½ lbs. of oil. How, then, he asks, can it have been so long disregarded? "Simply because the straw in an unprepared condition, is not in an available condition for food."

Before proceeding to the method of preparation advocated, there is a difficulty to be disposed of, which may already have arisen in the reader's mind. In casting our eyes about the building we were looking at, we merely noticed the floor, but did not go below it; and the question that at once occurs, is this—how is the manurial matter we obtain, to be managed and transported without some such material as straw to act as an absorbent, and give it greater cohesion? The answer is two-fold—the first, not strenuously insisted upon by Mr. M., although it has been one of the most striking features in his management, while the second he also employs, I believe, to a large extent.

Beneath the slats on which we have been standing, there runs along a tank about three feet in depth, of brick, laid in cement and water-tight, its two ends having a slight descent towards the middle, whence there passes a pipe or drain into a large outside tank of no less than 80,000 gallons capacity. Mr. Mechi's way is to admit a flow of water into the tank under the animals until its contents are diluted and liquified so as to pass wholly into the exterior cistern. The hose employed for this purpose, in hot weather may be used also to wash the whole interior of

the building and keep everything, even to the animals themselves, clean and cool. The existence of such a mass beneath them, does not prove in experience to emit the putrefying stench that might be anticipated; when undisturbed, indeed, it forms so dense a mass that sufficient air cannot penetrate it to produce the fermentation that would take place with the presence of straw to lighten up the heap and permit the admission and circulation of the atmosphere; and when the water flows in, the whole is washed away at the least possible disagreeableness and expense.

The Use and Manufacture of Burned Clay.

The other method of managing manure in this condition, is found in the use of *burned clay*. Upon the heavy soils of Steuben, Major DICKINSON has been an advocate of burning sods to use the ashes as a fertilizer, but it is quite a common thing in many parts of England now to burn the simple soil itself—of course whatever vegetable matter it may contain being considered a welcome addition, but the great point lying in the conversion into an available supply of mineral matters, of the hard subsoil and other clods—in themselves sometimes actually poisonous to the plant, although when reduced to brickdust at once rendered “attractive, absorbent, filtrative, instead of being, as formerly, sullenly unalterable and repulsive.” Good farmers use it to advantage, drilled with their turnips; spread broadcast over a field, it is found lasting in its effects—apparently sinking “gradually down into the obstinate subsoil,” and imparting to it something of its own permeability. The inorganic elements contributed to the soil by the animal life of every sort under or upon it, for which it has long been “the feeding-ground, the dung-heap and the grave;” the stones that lock up in their hard sides so many of the same materials which give the straw its glaze and stiffness, and the grain its phosphates; the germs of new weeds and the decaying remains of old vegetation, by this trial of fire are all converted at comparatively little cost or trouble into either what is actually available as plant food, or what exerts the best effect upon the mechanical condition of the ground.

Now, the burned clay may be employed to the best advantage with the manure under the boarded floors, and is cheaply obtained in large quantities—the estimated cost per 100 loads of 27 cubic feet each, being,

For labor and burning,	\$10.84
For fire wood,	2.08
For plowing and horse labor,	2.08
Total,	\$16.00

That is 16 cents a load. It is strongly recommended for use under sheep, only one-fourteenth part of their excrement being in solid form, while one barrowful of clay daily to twenty sheep will preserve the remainder perfectly. “Sheep do not get sore feet upon it.” The only purpose, remarks Mr. M., with which we turn over and manipulate our ordinary manure heaps, is to secure the proper decomposition of the straw they contain; manure mixed with burned clay is carried at once from the farmstead to the field and applied where wanted. L. H. T.

DRAINING SWAMPS—MUCK FOR MANURE.

At the recent Connecticut State Fair, Agricultural Discussions were held each evening; and the subject on Wednesday was the drainage of swamps and using muck for manure. The remarks, some report of which we find in the *N. Y. Tribune*, give additional confirmation to what we have already said on the subject, especially upon the different characters of soil which they present, and their value for the production of different crops. We therefore condense the most important portions for our readers.

Mr. SUMNER of Woodstock, had drained a swamp of eight acres, in which the muck was fifteen feet deep. The main drains are open, the rest covered. The muck of the ditches he estimated as worth more than the cost of dig-

ging, when composted and carried on the upland. At first the swamp was too soft to plow, and he raised a good crop of potatoes by wheeling on sand to cover the seed, a shovel full to a hill. The land is now firm enough to plow, and grows grass, and any vegetables desired.

Mr. HART of Cornwall, had drained a swamp with open ditches, taking off the water three feet below the surface, and seeded it to grass, and one year got fourteen loads of hay from four acres. Still, he said, that was not upland hay, nor in any way equal to it in value, and rich as the soil was, it would not produce a fair crop without manure. Hence had not of late given it much attention, and believed the muck worth more to cart upon the upland than to cultivate where it lies. He had found some benefit from hauling muck upon loamy soil, but it was more valuable composted, and he used the muck in all his stables, and also to absorb all the soap-suds and wash of the house, and thus made valuable manure.

Mr. HORT of New-Canaan, had not found cultivating swamp muck, several feet deep, profitable; but found it valuable to haul to the stables and out-houses for an absorbent, and to increase the amount of manure for upland.

Mr. BILL of Norwich, thought the difference in the effects produced arose from the variation of the character of the soil. His drained swamp was the best land he had. He also made great use of muck as a manure, making, with the help of six or seven head of cattle and a few hogs, three or four hundred loads of manure each year.—Guano and muck, ten pounds of the former to a load of the latter, makes a very valuable compost. He had brought very poor land into a state of great productiveness by the aid of swamp muck.

We copy the remarks of Prof. S. W. JOHNSON in full, as reported. He said:

“We have all grades of what is called muck, ranging from that containing only two per cent of any substance but vegetable matter, to those containing fifty per cent of mineral water [should not this be *matter*?] Of course the use of these mucks will produce different results. Upon pure muck we cannot produce any grass or grain that will ripen its seed, more than one or two years. Such muck is valuable to mix with soils, but is nearly worthless alone. Some persons have sent me samples of muck which they say are equal to good manure, without composting. Some muck is said to be deleterious, and in that I find salts of iron. To determine the value of muck, we must know its ingredients. In some cases nitrogen accumulates in muck, and when that is brought out and put in a situation where plants can assimilate it, it will always add to the value of their products. The excretion of any animal, mixed with muck, is rendered more valuable, from the fact that the muck absorbs and saves the ammonia.—Plants over-stimulated with ammonia, produce much foliage and few seeds. * * Some of the most valuable deposits of muck appear to be composed almost entirely of decayed leaves and vegetable substances. Such muck may be applied at once, with good effect, to almost any crop, without any preparation, or mixing with any other substance. Of the great value of muck deposits to the owners of poor upland, there can be no dispute. The only thing is to know how to treat it so as to make it most valuable.”

CHEESE MAKING.—Mrs. T. L. Hart, of West Cornwall, Ct., received the four first prizes for Cheese, at the late Conn. State Fair—to wit, 1, for old cheese—2, for new cheese—3, for old English Dairy, and 4, for new English Dairy—notwithstanding there was an extensive competition. The Homestead says Mrs. H. was Hartford born and bred, and never saw a cheese made until after she was married.

WINTER MANAGEMENT OF MANURE.

Looking over this morning, "*The Cultivator*" of some twenty years ago, when conducted by Judge BUEL, we noticed an article on the above subject, which might be read with profit even at this late day—but do not propose to reproduce it here. We will merely give his statement of "the objects to be obtained in the winter management of manure," and then add some thoughts drawn from our own experience. The objects are—

1. To prevent waste by leaching and drainage;
2. To prevent its becoming fire-fanged; and
3. To prevent more than moderate or incipient fermentation."

—Called away at this, by some necessary farm-work, we did not again take up the pen until evening. Meanwhile our thoughts were busy with the subject, and some conversation with a farming friend led us to give them the form of a dialogue.

B. "The question comes up—What is the best way of managing manure in winter?"

A. "Managing manure? and managing it *in winter*. It is as much as I can do to manage my foddering—the manure I *manage* when I draw it out in the spring. What next will you book-farmers meddle with?"

B. "Let's talk a little about that. When you drew out your manure last spring, where did you find the best and richest, or was it alike over the whole yard?"

A. "Don't know—didn't observe particularly. Got it all out though, and plowed it under for corn and potatoes?"

B. "Right enough, perhaps, so far, but let me tell you what you might have observed *as to quality*—what we have noticed when drawing out manure."

A. "Some of your personal experience in the barnyard?"

B. "Yes. And first, it is an axiom in hydrostatics that 'water runs down hill.' It certainly does so in the barnyard. And, however level the surface may be, there is generally a 'lower place,' and in spring time that place is full to running over, of a dark colored fluid, which drains away, it is to be hoped, into the farmer's adjacent fields, and not into some stream or public highway."

A. "Yes, I hope so. I would not be as wasteful as that."

B. "And yet you may, by not managing your manure properly, waste one-half its value. This drained manure of which we were speaking has suffered loss. Testing it by drying, it is (even if originally of the most valuable character,) light, chaffy stuff, compared with that which has not been exposed to this leaching process, showing that it has lost largely in value."

A. "Not much loss to me, perhaps, for the drainage enriches my orchard."

B. "If there is much of a hollow in the barnyard, and the subsoil is clay or hard-pan, water can pass off only by evaporation. That hollow, (and some make them on purpose,) is frozen over in very cold weather; in mild winters, and for a long time in spring it is 'a slough of despond,' almost impassible to man or beast. It so remains for a long time in summer, unless cleared out and drawn to the field—a large part draining from the cart on the way there. Of this we observe:

1. The liquid part is of some value, though too diluted, but a large portion is lost in application.
2. The solids (tested as before, by drying) are nothing but litter in an almost undecomposed state—for decomposition goes on very slowly in cold water."

A. "Very true, and that is one reason why I dislike these 'dishing' barnyards."

B. "In another part of the yard the manure pitched up is nearly all straw, more or less rotted, and of value so far as it has not been leached and the original material will allow. Mere rotten straw, however, is worth little; a wagon load thoroughly rotten could be carried on a wheelbarrow. Another spot seems mostly composed of animal droppings thrown from the cow and calf stables, or around the feeding places in the yard. This is the best of the manure, but it wastes by leaching and decomposition before the farmer is ready to apply it to the soil."

A. "You forget the horse manure back of the barn."

B. "No, that is managed the worst of all. The outer part is well bleached straw and dung—the center is an almost inert mass of fire-fanged straw and manure. The heat which has been evolved in its decomposition has been sufficient to drive off its most valuable constituents, and *the property of fermenting readily*, which, according to Prof. Johnston, renders it so valuable as a means of *bringing other vegetable substances into a state of fermentation*, is nearly or entirely lost."

A. "How then shall I manage my manure? If you can show me any system that promises to pay well, perhaps I'll go into it."

B. "You have good sheds around your barnyard to shelter your stock."

A. "Yes, I do not like the trouble of stables, but I want to keep my cattle and sheep comfortable. So I stable a part—my milch cows and young calves—and allow the rest the run of the sheds and yards."

B. "Then you can put 'the wheelbarrow system' into practice. It does not require a great deal of labor and answers a very good purpose under your particular circumstances."

A. "Well, give us the *system* of the one-wheeled locomotive."

B. "First, have good racks under your sheds, so that your cattle will feed there. Second, have them roomy and well littered, so that they will rest and sleep there.—This will, of itself, bring a large share of your yard manure under shelter. But its decomposition will be too slow to allow it to attain its greatest value for spring crops.

Now bring on your wheelbarrow. Remove to your shed and the dryer portions of the yard, every day, the manure from the horse stables. This dung is richer in nitrogen, the most valuable constituent of manure, than that of any other farm stock, but as usually treated, a large share of its value is lost. To retard its too active decomposition, mix it with the colder, less active dung of cattle from their stables, &c., and a large quantity of litter, and the value of the whole is greatly increased—the horse manure carries on the decomposition of the whole mass, (if kept damp enough,) "about right" to prevent loss, and to get the full value of all the materials employed. If not sufficiently rotten in spring, it may very speedily be decomposed by giving it *air and moisture*—by heaping it in light heaps out of doors for a few weeks. Or if plowed under immediately in a long state, it is much more valuable than if not *managed* as above described.

"Mix and shelter your manure in this way, Mr. A., and you will find it a different article in its effects from that you have heretofore applied. At least I have done so.—It is important, I will repeat, that this mixed manure be kept where it will be trodden hard by the stock. Treated in the same way, and placed in a barn cellar, it will fire-

fang or burn—here it is too solid for that, but not for a slow decomposition. The constant addition of litter required, will use up the refuse fodder of the farm, and more too, if one gets dry leaves, sawdust and the like, to add to the stock of fertilizing material. And the use of the wheelbarrow, or mixing the material where it will be sheltered and receive and absorb a large share of the liquid manure of the stock, will give about the best condition and quality of barnyard manure."

LARGE CROPS vs. LARGE FARMS.

It has been tersely remarked, "If our farmers, instead of laboring to double their acres, would endeavor to double their crops, they would find it a vast saving of time and toil, and an increase of profits."

Is this true? Is the secret of successful farming what it has been declared to be, "Much labor on little land?" Up to a certain point we believe it to be so. A few farmers are successful because they possess a soil naturally rich in every element of fertility, and suited in character and situation to the growth of large and profitable crops, but these farms form but a small portion of the whole surface of the country under cultivation. Most soils need some improvement and amendment—deepening, draining, and manuring—in order to their highest productiveness; and all need careful cultivation, at least to keep out noxious weeds, the "thorns and thistles" with which the earth was "cursed for our sake."

With too many farmers, the acres in possession do not come nearly up to the productiveness which might be attained. "Doubling the crop" would be thought a very simple undertaking by the progressive farmer—he would merely add sufficient labor in the preparation of the soil to give the product to which he would devote it, a fair chance,—depth of soil, appropriate food, freedom from weeds, etc.—and the yield would be doubled at once. That farmer will be most successful who, by a wise expenditure of labor and capital, gives to the lands he cultivates a like character with those most productive, not forgetting, also, by clean culture, to *concentrate* the whole energy of the soil on the crop. Artificial means must be employed to give depth and fineness to hard and shallow soils, and a course of manuring and culture adapted to add the elements of fertility to sterile and impoverished ones. Stagnant water, that enemy to all vegetation of a profitable character, must be drained off, and retentive soils thus ameliorated. Light sands ask for an addition of a calcareous or aluminous character, to give them better consistency for cultivation. The hill-sides and knolls have long contributed from their soluble and floating elements of vegetable matter, to fill the adjacent marshes; let these return their rich deposits of muck, and a partial exchange of soils would be no injury.

The passion for more land is one which works incalculable injury to American agriculture. It crowds out of farming many who would otherwise engage in it—many who, were small farms more readily attainable, would do good service in the culture of the soil, and in the elevation of the character of our farming population. If the great mass of farmers would engage in the laudable enterprise of "doubling their crops," they would soon find use at home for all their outside investments—and excuse for selling off that portion of their land which they had not ample means to cultivate,—would soon find, too, that they were making more money, and doing a more pleasant and

satisfactory business than under their former system. We are glad to see the idea gaining ground that farming cannot be carried on without capital, enterprise, intelligence—and that it opens a fair field for the exercise of the noblest endowments of the human mind.

Let us then be less covetous of surface—of large farms and broad plantations—and more anxious for productiveness—asking for better crops, finer animals, more serviceable implements, rather than "one field more." Why, when our title deeds cover all beneath us, should we not be anxious to own and use the subsoil, instead of seeking ever to enlarge our outside boundaries. Why cry "more land," when our sterile acres are a shame to our skill in farming what we already possess, they give such meagre crops. Let us farm thoroughly a few acres, and we shall thus best prepare ourselves to farm profitably upon a larger scale.

THE CROPS OF OHIO IN 1858.

A table of the grain and meadow crops of Ohio in 1858, contained in the last *O. Cultivator*, shows that

1,695,412 acres produced	17,655,483 bush.	Wheat.
1,834,138 "	50,863,582 "	Corn.
90,191 "	874,556 "	Rye.
125,745 "	2,163,199 "	Barley.
71,282 "	791,021 "	Buckwheat.
1,357,874 "	1,806,465 tons	of hay.

This is an average of not quite *ten bushels and a half* of wheat to the acre, and twenty-seven and three-quarters of corn; a little more than nine and a half of rye, sixteen and a half of barley, and eleven of buckwheat; and, finally, and best of all, full a ton and a third of grass to each acre of meadow land. If we had the time at command, it would be an interesting although rather laborious task, to give some further details as to the average in different counties. A hasty glance at the figures seems to show that the largest average of wheat is 19 bush. per acre in Hancock Co. Erie Co. comes next with only a little more than 16, and the only others which average more than 15, (and all less than 16) are Henry, Huron, Richland, Sandusky, Scioto, Seneca and Wyandot. The average of many counties is considerably below 10 bushels. Stark produces the greatest quantity—being the only county that exceeds a half million bushels—its average is about 11½ per acre. Next in amount follow Butler, Wayne, Seneca and Richland, each producing between four and five hundred thousand bushels. There are two counties, Trumbull and Ashtabula, containing each over 50,000 acres of meadow land; Portage contains a little over 40,000 acres, and the next largest are the following in the order named, all having more than 30,000 acres: Geauga, Cuyahoga, Stark, Lorain, Wayne and Medina.

GROWING CLOVER FOR HAY, SEED, AND PASTURE.—The advantages of this crop are well stated in the communication of "F., Orleans Co., N. Y.," and we can add our testimony to its value on all upland soils. As to hay the past season, although the dry weather of May and June injured our clover, we get more hay from six acres of this grass than from four times the number of acres of old meadow. Farmers who had no clover or newly seeded timothy meadows the past season, have little hay in their barns the present winter. We got a good second growth, but think it is not as fully seeded as some years—many heads containing little or none. The clover seed crop usually pays as well on the average as grain crops, and requires much less expense of cultivation. It probably exhausts the soil as much as other crops of equal value, but it also enriches it by increasing the return of manure from the barn-yard, and also by the decay of the numerous roots in the soil. B. *Niagara Co., N. Y.*

HINTS ON DEEP PLOWING.

That deep plowing is often very beneficial to many soils does not admit of a question among intelligent farmers.—The *when* and *where* is the only point of dispute. We find in an English agricultural paper this subject discussed at some length, and think the points brought out will interest and instruct American readers. We condense them in the two following paragraphs, and add some facts from a practical New-England farmer and writer.

Deep plowing is most effectual in the autumn, exposing soil to the influence of frost, rain and air, through the winter, which act upon the mineral ingredients of the soil, rendering them available for succeeding crops; also, pulverizing the soil and thus facilitating the passage of the roots into the subsoil. As regards the period of the rotation, it should precede root crops (or in this country, Indian corn) or may be the first plowing for fallowing preparatory to the wheat crop.

Deep plowing is most beneficial to stiff clays, and, as a rule, we may plow deep when the subsoil is of the same character as the surface soil, if both are tenacious, or when the subsoil is composed of good clay, only requiring atmospheric influence to sweeten it. Deep cultivation should be avoided on nearly all very light soils, and in plowing for crops after large applications of manure, thus burying it too deeply, or in turning under clover or other green crops. Deep plowing in autumn, on most clays, is equal to a half dressing of manure. Clay from which the air is excluded, exhibits a dark blueish color. After draining, it is not advisable to bring up more than two inches of clay subsoil at a time; otherwise more is brought up than the frost, &c., can fit for growing good crops.

Hon. F. HOLBROOK, writing of the advantages of deep plowing on long cultivated soils, to the N. E. Farmer, says:

"Where the land is of a close texture, with a strong compact subsoil, it is not unusual to find a better farm underneath, than that which has been worked so long and so shallow on top. By breaking through this artificial hardpan or crust, and bringing up a portion of the under soil to the light of day and the influence of manure, the crops are by that operation considerably increased, even though no more than the customary quantity of manure per acre is applied. And if high manuring is practiced in connection with the deeper cultivation, the crops will be very much increased over what could be realized from the old shallow plowing and artificial hardpan near the surface, accompanied by as high manuring. Then there is the difference, too, in the case of tilling the crops raised on deep, mellow land, as compared with those on hard, shallow plowed land.

If deep sod plowing is to be practiced, it is especially desirable to do it in the autumn, that the atmospheric influences may ameliorate and modify the upturned subsoil, preparatory to future cultivation. Plow the green-sward in November, say eight to nine or ten inches deep, according to the quality of the subsoil. In the spring spread a good coat of manure, which, if fine compost, can be sufficiently mingled with the soil and covered by the harrow and cultivator; or if coarse, can, by lightly cross-plowing, be turned under three to four or five inches deep, according to the depth of plowing in the fall. If the plowing was, say nine inches deep, there will be no difficulty in guaging a light plow, with a sharp share and wheel on the beam, so as to cross-plow in the spring and cover the manure about four inches deep, without disturbing the sod underneath. Green manure, well covered that depth, will decompose readily, and be more active and effective on the succeeding corn or other hoed crop than if turned down under the sod."

An instance is given where sod land was plowed in the spring for corn, turning under the manure some six inches

deep. "Nearly half the crop was destroyed by grub worms; and the soil, being a close compact loam, the manure under the sod was too inactive, so that the corn which did survive was backward in maturing." The next year, the owner wishing to plant a piece of green-sward adjoining, also infested by grubs, consulted Mr. H., who advised as above. It was plowed in November, and in the spring harrowed lightly and then manured and cross-plowed, turning under the manure from four to five inches deep. The corn was planted in the usual manner, and produced a good crop. No traces of worms have been seen, and the soil has been very mellow, and free from grass and weeds, and easier to till every way than the piece of the previous year. The subsoil was a close, light-colored, clayey loam, but by spring it had changed to several shades darker color than when first exposed to the air, and no doubt the good effects of this deep plowing will last for many years.

An instance of the renovation of old worn out plain land by deep plowing accompanied by high manuring, is given by the same writer:

"The land had, for many years, been under the wasting effects of shallow plowing and severe cropping with rye, until at length it was quite exhausted, and abandoned to pasturage, yielding a scanty herbage in the early part of the season, but becoming dry and sere by mid-summer, and remaining so through the remainder of the year. My friend found that the surface soil was of little or no account any way, but thought there might be some hopes of making productive land of the subsoil. He accordingly commenced upon a piece of the tract, of about five acres, by at once putting in his universal sod and subsoil plow ten inches deep, in the month of November, and turned up a subsoil of yellow loam, fine-grained and free from stone, and that had never before seen the day. In the spring following the plowed land was manured broadcast, at the rate of about twelve cords per acre, and cross-plowed with a sharp steel plow, turning the manure under four or five inches deep. The field was then harrowed, furrowed out in rows each way, a tablespoonful of superphosphate put in each hill, and the piece planted with corn. It yielded about seventy bushels of shelled corn per acre, and the next year a good crop of oats, and is now well set in grass, for a mowing field. Other portions of the condemned old plain are now undergoing a similar process of deep plowing and high culture, with good results; and this desert will doubtless soon blossom as the rose."

As we have remarked before, there can be no question that a deep and fertile soil will produce much the largest and best crops. There must be room for the roots to go down beyond the reach of a common drouth, and to find appropriate food for their use, and this is most largely present in a deep and mellow soil. Deep plowing and high manuring will, on most soils, produce the profitable results, and as the present is a very favorable time for the first, we hope these broken hints and gleanings will prove of service to our readers.

POTATOES—NEW VARIETIES.

EDITORS CO. GENT. AND CULT.—For several years past I have been interested in trying new varieties of Potatoes, and have found none that have pleased me so well as "Prince Albert" and "Davis' Seedling," both on account of productiveness and excellence, as well as freedom from rot. I raised over two hundred bushels of "Prince Alberts" this year, the finest tubers I ever saw—their eating qualities unsurpassed; the yield being on a considerable part of the ground planted (with ordinary cultivation) at the rate of full four hundred bushels per acre.

I planted one peck of "Davis Seedlings"—putting from one to three eyes in a hill, on land highly manured, but

rather wet, the yield being twenty-eight bushels of perfectly sound tubers—some hills nearly or quite filling a peck measure. I think most varieties would have rotted badly on this ground. The eating properties of this variety are also first rate.

The above named varieties are *white fleshed* and on account of their good qualities, great productiveness, and manifest freedom from rot, will eventually come into very general cultivation as market varieties. B. J. HARVEY.
Adrian, Mich., Nov. 21.

MORE ABOUT MR. MECI'S MANURING.

The following extract from our Foreign Notes, explains Mr. Mechi's system of Liquid Manuring, to which allusion has been made in another column:—

The first operation, as has been already intimated, is to force a jet into the tank under the sparred or boarded floors. It thoroughly stirs up, dilutes and intermingles the mass there accumulated; and the whole runs off into the outside cistern—a structure 30 feet deep from the crown of the dome which rises some feet above the ground, and 30 feet in diameter at its widest part. The engine force-pumps take the manure from the tank, and propel it through underground iron pipes over the whole farm, in the same way that the water in a city is carried around through its streets. A pipe of four inches diameter carries it first a distance of several rods, where there is an air chamber to relieve and equalize the pressure; then three pipes branch off in different directions, of three-inch diameter, and distributing the liquid through hydrants, one hydrant being allotted for every ten or twelve acres.

They were employed in the irrigation of a field of rye grass, containing eight acres, the day of my visit, and I could have desired no better exemplification of the system. To the hydrant in the center of the field, is attached a hose long enough, with the force of the jet, to sprinkle over the whole area. A man, with the aid of a boy in moving the hose, &c., was giving all parts a most thorough wetting.—The droppings of the animals, instead of remaining to kill off the vegetation they chance to cover, are washed into the surrounding earth by a minute's application of the stream. Seeds of all sorts, by the way, which get into this liquid manure, will do no harm when they come out upon the land, for a short saturation in the tank has been shown to destroy their vitality. The vegetation around us seems already to have received a new impulse of life within the hour since it was showered, and yonder, where the hose is now in play, the herbage brightens up as it might after a summer shower.

In 1858 this field was in wheat; I did not ascertain the precise yield obtained upon it, but the bailiff on consulting his books for me, found that the average for the whole area under wheat upon the farm, was forty-six bushels per acre—rather a smaller production than a really good year will bring. In May, Italian rye grass had been sown upon the wheat. After harvest it would probably have received an irrigation, and in March this year eleven bullocks, five horses and fifty sheep, began to feast upon it—continuing to graze here for three weeks. Then an intermission of a fortnight was given for irrigation and growth; the stock again admitted for about the same period as before, thus terminating this second feeding about the middle of May. After a fortnight of further respite, the third was begun; it was nearly or quite concluded when I was there, and the fourth was being urged along. The third feeding, however, was a longer and closer one than either of the others, and full three weeks were then to be allowed—bringing the fourth at harvest time, when a growth of full two feet would be ready for consumption. The grazing could then be continued at intervals according to the season, the condition of the stubbles, &c.; occasionally, indeed, a fifth regular cropping has been taken, but the yield of the second year would not probably be benefitted by pressing the first too closely. The second year, indeed, the produce has sometimes been larger than the first, but Mr. Mechi's experience has not been favorable to more than two year's growth of this crop.

It is only by means of a most abundant supply of water, that so much solid matter may be carried out by means of this underground cartage. Of course the manure may be diluted in different degrees; it requires about fifteen tons of water, I think I was told, to make one ton of the manure run easily, but in hot summer weather, when the purpose is really one more of irrigation than of actual manuring, as well as to obviate any danger from the too great strength of the mixture, sometimes fifty hogsheads of water are admitted to one of manure. Not only does the water thus float out all the stable accumulations, but whenever these fall short and guano is wanted, it is also sent by the same road, and, still more strange, the carcasses of dead animals come likewise into this common receptacle, are macerated by degrees, and pumped at length over the fields—so that at one time the tank actually contained, says Mr. M., between 20 and 30 dead horses and cows.—During the winter, or upon fallow land, there is no danger from the too great strength of the liquid, while in a dry time, on the contrary, it is perhaps true that the weaker the solution, and consequently the greater its quantity, the better.

HARVESTING INDIAN CORN.

Although there has been considerable discussion upon the subject, I have noticed but one actual trial being made, and that has been published in nearly all of our agricultural papers, and the result was in favor of topping the corn. So long as a difference of opinion exists in regard to the best mode of harvesting corn, farmers should be willing to give their opinions, even if they have not made an actual trial. That one way is *the best* under all circumstances, we do not claim, although some *editors* as well as farmers, think there is but *one* way.

I was taught to cut the stalks, and practiced that mode several years, and it was the usual custom among farmers in those days. But I have adopted the mode of cutting up my corn by the roots for the last few years, and am satisfied it has several advantages over that of topping, or cutting only the portion of the stalks above the ears. In the first place the labor of cutting and binding stalks is about the same as cutting and binding the whole; consequently nearly one-half of the labor is saved by adopting the mode of cutting up by the roots. Again, the fodder is worth nearly double, an item worth saving, especially this season, where the hay crop is light, as it may save many tons of hay in many cases. Most farmers fail in stooking up corn, by making their stooks too small; accordingly their fodder is injured much more. There is no danger in putting fifteen to twenty-five bundles in a stook if put up right, that is by leaving a little space in the center for the air to circulate—besides it will stand much better.

Many farmers also practice sowing winter rye upon their corn ground, and by cutting it up it may be sown as soon as the corn is cut. I practice the following mode: I plow and sow strips of land of sufficient width for stooks, and at such distances as convenient, and stook it up as fast as cut. Then the ground may be plowed and sowed between the rows of stooks at any time. Consequently you get your rye sown a number of weeks sooner than by the other method—an important consideration. There is also another mode adopted by a class of farmers called *slovenly*. They let the whole remain in the field, and go round and pick off the ears. If not worth anything for fodder, it would pay to cut and cart into the yard for manure. Besides they would be out of the way for the next crop.

As our seasons are so variable, we are under the necessity of adopting a mode which we should not under more favorable circumstances. If a severe frost is apprehended, it ought to be cut to save it from that total drying out of the juices, which seems to take place if allowed to stand on the hills. J. B. B. *New Braintree, Mass.*

NEW GRAPES.—We are indebted to SAMUEL MILLER of Lebanon, Pa., for a fine collection of plants of thirteen of the newer varieties of American grapes, sent to us for trial in the climate of New-York.

Rural Architecture.

WORKING-MEN'S COTTAGES.

GEORGE D. RAND contributes to the ANNUAL REGISTER OF RURAL AFFAIRS for 1860,* several original designs for COUNTRY HOMES of different classes. We purpose to copy herewith a part of his remarks upon "Working Mens' Cottages," accompanied with two or three of the Designs—referring the reader for further information and for Designs of Farm Houses, &c., to the REGISTER itself.

It has been with the purpose of bringing to the aid of those not likely to consult more expensive and elaborate works on rural architecture—or if they should consult them, should find everything on too costly a scale for their purposes—that we have introduced into these pages from year to year, such designs as, in our judgment, are calculated to improve the taste and furnish some available knowledge upon the subject of building a home in the country. We have some reason to believe that our previous efforts have been widely appreciated; and we hope this further contribution may be as favorably received and as extensively useful.

We have thought it of little use to publish designs of cottages containing, besides the pantry, closets, &c., less than three rooms. No good American housewife is for any long time content with less, and no industrious, intelligent working-man, need ask his wife to take up with less. Those who are willing to live in more straightened quarters, would never look into these or any other pages for a design for such a cottage, but would build something after the style of those they were familiar with, whether it were the log cabin or the Irish laborer's shanty of turf and boards. Our designs, therefore, in this number of the Register, will begin with a cottage, which, although small, has some claims to a pleasant style of living, and which can be made tasteful as well as comfortable. Such a dwelling will be found capacious enough to rear in much refinement an ordinary family, and if substantially built, even of wood, will last two or three generations.

That the smallest of these designs may be the better appreciated, we wish to refer the reader to some remarks made in a previous number of this work, in relation to building small cottages on large farms, for the occupation of the farm laborers and their families. Since the publication of those remarks, we know of several instances where they have been acted on, and have reason to rejoice with those more directly interested, that so good and every way beneficial results have followed the adoption of the plan. We ask the owners of those large farms who take into their own families the numerous laborers whom they are compelled to employ, to consider a moment if they are pursuing the most judicious course. We acknowledge it may involve less immediate outlay than any other plan, and may in some instances be a trifle less expensive from year to year. But we will suggest once more, whether the saving be not made at the expense of many home comforts, much refinement in the increasing family, and an untold amount of drudgery for the farmer's wives and daughters, that fearfully imperils their continued good health, and reduces them to a servant's knowledge of the world about them, and how to render home attractive, and all its influences pure and healthily stimulating. We are among those who believe that a farmer's home may be as full of grace and beauty, and as suggestive of high hopes as any other. We know of no good reason why they, more than others, should yield their lives and the lives of their families, to the discomforts of a primitive style of life and the hard wearing monotony of thoughtless toil. The easily attainable possibilities of a nobler life are so much greater than this—the way has been shown in so many living instances, and the reward reaped is so evi-

dent and satisfactory, that we are impatient that every dweller in the country should make the most of his opportunities, and labor not alone to put money in his pocket, but also to increase his knowledge, cultivate his appreciation of the beautiful in art and nature, and attune his perceptions to the fine harmonies of a well-ordered, refined life, which unites the whole family circle in constant efforts to promote the general intelligence and happiness.

Our plans and descriptions in this number occupy so much space, that we will not stop longer to discuss the general theme, but proceed to the plans at once. First we give three designs for Working-Mens' Cottages.



Fig. 1.

In accordance with the preceding remarks, the first design we shall present, is one as compact and as moderate in size as will allow of the number of rooms specified. In the perspective view, (fig. 1,) we have chosen to represent a style of construction once very common in the older States and across the ocean, and even now regarded by the best architects as peculiarly adapted to small picturesque cottages. The side walls are only one story in height, which renders the style more suitable than story and a-half houses, when either stone, brick, or concrete is to be used. The tie-beams go directly across from plate to plate, thus preventing all spreading from the pressure of the roof, which is a fruitful source of trouble in one-and-a-half storied houses. The steep pitch of the roof, to a height sufficient to allow of comfortable rooms in the attic, makes the chambers nearly as large and pleasant as in a house of two full stories, while the cost is considerably less, and much is also gained, in our opinion, in the picturesque appearance of the exterior, which harmonizes so well with all our ideas of what a small unpretending cottage should be.

The main portion of the cottage is only 16 by 24 feet. A lean-to, 9½ feet in width, is added on the back side. It should be made of good height, coming just under the cornice of the main part, the roof rather flat, and hipped at the ends. One end is left unenclosed for a veranda, as may be seen by reference to the design.



Fig. 2.—PRINCIPAL FLOOR.



Fig. 3.—CHAMBER.

The plan (figs. 2 and 3) needs little explanation. It has one or two points of superiority over most plans usually adopted in so small dwellings, which may be mentioned. It will be noticed that the front door opens into a pretty hall or entry, from which the chambers are reached, and which also gives access to the living-room and the kitchen. This arrangement gives an air of elegance rarely seen in such a cottage, and its mistress will readily appreciate the difference between it and the more common way of compelling every person who wishes to go up stairs, to pass through the kitchen. The cellar, which should be

* This valuable little work has been issued annually for six years, and is pronounced "a complete encyclopedia in miniature" of all Rural Affairs. The Number for 1860 contains no less than ONE HUNDRED AND EIGHTY ENGRAVINGS. See advertisement in another part of this paper.

under the whole of the main part, is reached by a door leading from the kitchen, under the chamber stairs. Two good bed-rooms are provided in the attic, each with ample closets.

The window and door hoods, and the verge boards, are the only non-essentials of the exterior. But we believe that whoever builds a cottage like this, can poorly afford to dispense with them. Their cost need be very little, while the air of neatness, content, and rural fitness which they confer, can hardly be over-estimated. If the interior be made to correspond, by taste in its arrangement, by a few pictures and graceful curtains and flowers, a cottage as inexpensive as this may be made to express more of happiness and refinement, than can be got out of many statelier and more ambitious mansions.

The estimated cost of this cottage varies from \$250 to \$350.

DESIGN II.



Fig. 4.—PERSPECTIVE VIEW.

The accommodation afforded in this design, perspective view, fig. 4,) is the same as in the preceding one, with the exception of an additional chamber. The kitchen, however, is larger, and the living-room has a pretty window-seat and two closets. This way of obtaining closets in a

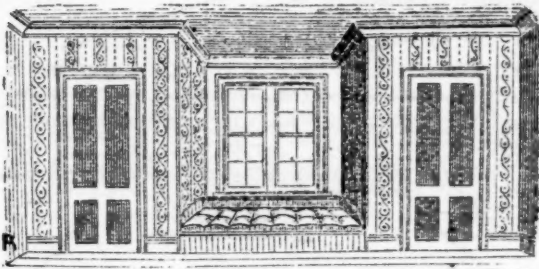


Fig. 5.—WINDOW SEAT.

room which would otherwise be destitute of them, has much to recommend it. It improves the appearance of the room, while it lessens but little its apparent size. The accompanying cut (fig. 5) will give a good idea of their appearance and construction.

The exterior we have given to this design is a very common one, and requires no explanation. It may easily



Fig. 6.

be improved in appearance by carrying up the central portion of the lean-to as high as the main building, as indicated in figure 6. This arrangement would give an additional room on the second floor. The dotted lines in the chamber plan (fig. 8) show how it might be done. The



Design 3.—PERSPECTIVE VIEW.

chimney is located in the center of the house where all heat is saved, and where it is accessible to the stove funnels on every side. The passage between the kitchen and the living-room may have a door on each side, so as effectually to exclude all noise, heat and odors from the kitchen. The cellar is reached from this passage, and opposite the

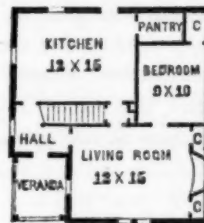


Fig. 7.—PRINCIPAL FLOOR.

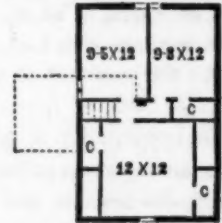


Fig. 8.—CHAMBERS.

cellar door is a small closet. The cost will vary from four hundred to five hundred dollars.

DESIGN III.

This cottage is properly a suburban one, and should not be built far away from some town or village. Its form is well adapted to brick or concrete, as it is nearly square, and has a broad, overhanging cornice. The square bay in front, the circular-headed door and the double windows, are the distinguishing features of this cottage. The accommodation is about the same as in the two preceding designs. The hall, however, has a more villa-like breadth, and the living-room has three cases of book-shelves, which should be enclosed by glass doors. The large bay increases the size of the room, and adds greatly to its elegance. The bed-room opens from this room in the plan, but can

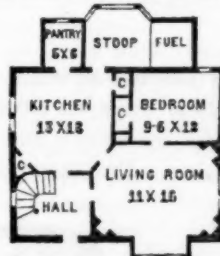


Fig. 10.—PRINCIPAL FLOOR.

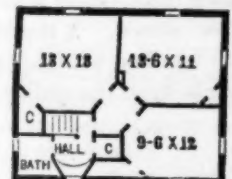
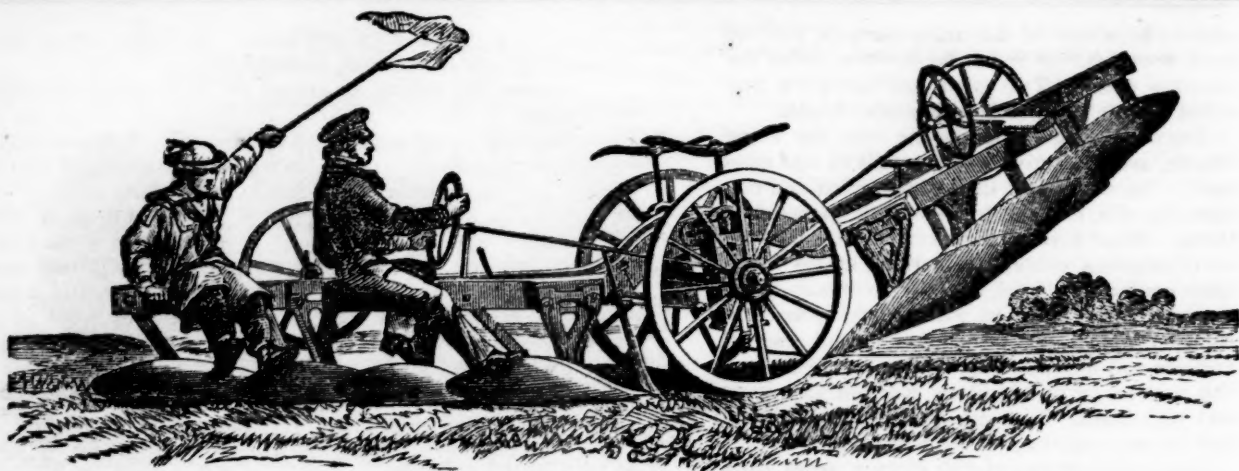


Fig. 11.—CHAMBER PLAN.

be made to communicate also or solely with the kitchen, if desired. The kitchen has two good closets, from one of which the cellar stairs descend, and a good-sized pantry. This pantry, and the partly enclosed veranda, and space for fuel, is simply a piazza with enclosed ends. Where neighboring houses are quite near, as is often the case in a suburban district, it is desirable sometimes that some means be adopted to ensure privacy, and we know of no better way than that here indicated.

The arrangement shown in the chamber plan (fig. 11) is a very happy one, as by no other way could so good room be obtained in the same area. The corners cut off supply the necessary closets. The hall has a closet and a window-seat, and a bath-room is supplied on the left.

The entire cost will be from \$600 to \$800.



FOWLER'S STEAM PLOW—ARRANGEMENT OF THE PLOWS.

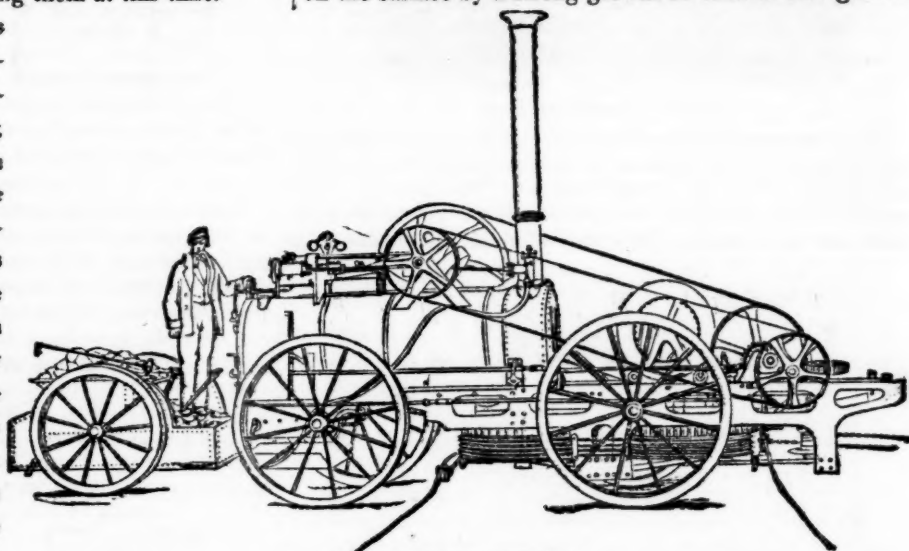
FOWLER'S STEAM PLOW.

We are not altogether certain that more has not been said of late upon the subject of Plowing by Steam, than its importance with the great majority of our farmers really deserves. But we cannot forbear giving these illustrations of Fowler's invention—the one which has proved itself the most successful in all the foreign trials—because we think no engravings of it have before appeared in this country; it is to the courtesy of the manufacturers, Messrs. RANSOMES & SIMS, of Ipswich, England, that we are indebted for the opportunity of presenting them at this time.

The arrangement of the plows is such—as seen in the engraving at the head of this page—that no *turning* is necessary; one set of shares is inserted in the ground when plowing in one direction, and the other set in returning. The *second* cut shows the engine which furnishes the power, and which, standing on the headland, draws itself very gradually from one end of the field to the other, as its surface is gone over by the plows, while in a similar way it also causes the *anchor* represented in the *third* engraving to advance along the opposite side of the field from that on which it is itself placed. A line of wire cable is drawn, by means of the windlass attached to the engine, backwards and forwards upon the pulley on the anchor. For example, at

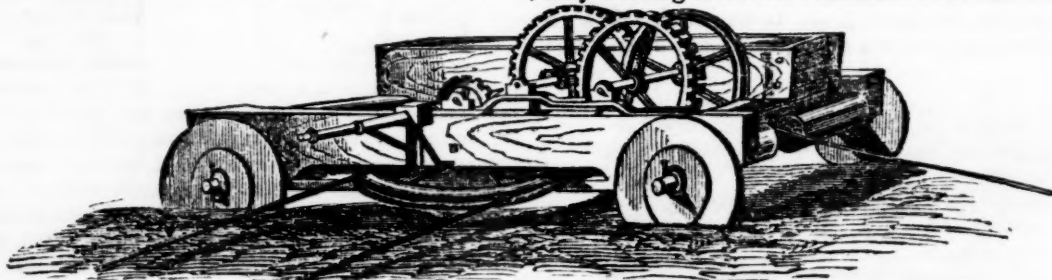
The attendance required includes an engineer, plowman, man at the anchor, two boys to shift the wire cable from time to time out of the way of the plows, and a water cart to supply the engine. The following extract from the committee's report at the Royal Agricultural Society's Chester Show will be read with interest, for it includes an estimate of the exact cost of working involved in the use of this ponderous affair:

"The trials were commenced in light land, and continued in a field where the soil was a strong tenacious loam, in a very dry and indurated condition, and matted together on the surface by a strong growth of thistles and grasses.



THE ENGINE AND WINDLASS.

An experimental trial with a Wilkie Plow (swing) gave a dynamometrical result of 51 stones, or 6½ cwt., as the traction power required to turn a 6 by 9 furrow, thus showing it to be fully equal to a strong three-horse soil. The daily working of Fowler's Machines we estimate as follows:



THE ANCHOR PLACED ON THE OPPOSITE SIDE OF THE FIELD.

starting the windlass is turned so as to draw the set of plows from the engine across to the anchor, turning four furrows at once; the motion is then reversed and the plows are drawn back again, making four more furrows as they return.

Engineer.....	£0	5s	0d.	say	\$1.25
Plow and anchor men.....	0	6	0	"	1.50
Two boys.....	0	2	0	"	1.50
Water carts.....	0	5	0	"	1.25
Coals, 10 cwt.....	0	10	0	"	2.50
Oil, etc.....	0	1	0	"	.25
Removal.....	0	4	0	"	1.00
Interest at 5 per cent., and wear and tear at 15 per cent. on first cost (£650, equal					

to \$3,250 nearly), assuming 200 as the number of working days in the year... 0 13 0 " 3.25
£2 6 0 \$11.50

On the light land the work was performed, including stoppages, at the rate of $7\frac{1}{2}$ acres per day of ten hours.—The actual rate of travelling, while the plows were in full swing, was 3.83 feet per second, which gives about 1.031 acres per hour, the soil moved (four plows) being 3 feet 4 inches wide by 6 deep.

On the heavy land, 4 acres, 3 roods, 12 poles were plowed in nine hours, thirty-nine minutes, equal to five acres per day of ten hours; the same sized furrows being taken with Cotgreave's Trenching Plow, the rate of work was of course greatly diminished. The furrow was 12 to 14 inches deep, while the width (two plows used) was 20 inches. About the same quantity of soil was removed as by the other plows;* but a little more power was consumed. The work done was just 40 poles per hour, or $2\frac{1}{2}$ acres per day.

These results enable us to give the cost of plowing, by Fowler's machine:

Of light land at.....	£0	6s.	0d.	per acre, \$1.50
According to the rate of work done in trials, or taking six acres per day as the average, at.....	0	7	2	" " 1.79
Of heavy land.....	0	9	2	" " 2.29
Of trenching ditto.....	0	18	4	" " 4.58

Our estimate of the quality and value of the work thus performed is that the light land could not have been done by horse-power for less than 8s. (\$2) per acre; that the heavy land could not have been plowed by horse-power for less than 12s. 6d. (\$3.62) per acre; and that the trenching could not have been done by horse-power at all.

The Committee further express the opinion that these estimates of expense represent the extreme maximum, and close with the award of the \$2,500 prize, and the conclusion "that Mr. Fowler's Machine is able to turn over the soil in an efficient manner, at a saving, as compared with horse labor, of, on light land $2\frac{1}{2}$ to 25 per cent.; on heavy land, 25 to 30 per cent.; and in trenching, 80 to 85 per cent., while the soil in all cases is left in a far more desirable condition, and better adapted for all the purposes of husbandry." While we met with several gentlemen in England who seemed to think the hearty commendation of this Report sanctioned by the facts of the case, we were not convinced that the sober sentiment of "practical men" had yet been brought to look at the subject in quite so favorable a light.

GROWING CLOVER.

MESSRS. EDITORS—As hay has been a short crop, and sells for high prices, and consequently is receiving considerable attention, it has occurred to me that a few thoughts on the advantages of raising clover may not be out of place, besides the general advantages of clover in a rotation of crops and in improving the farm. The past season has shown that there is some things peculiar to clover which should not be forgotten. One of these was that while the crop of grass was nearly ruined in old timothy meadows by the June frost, clover was not injured, although it was not very heavy in consequence of May and June being very dry; but if the first crop of clover was less than an average, the second crop made it up. Where the first crop was cut in season, the second was the best, having in consequence of seasonable rains in July and August, made a taller and thicker growth, so that now those that depended on old timothy meadows for hay have a very short crop, while others that had good clover fields, and cut two crops for them, are buying up cattle at the present low prices, being in some instances able to winter more than their usual amount of stock—or where the second crop was saved for seed, will have a good crop of clover seed to sell, with good prices in prospect, in

consequence of a large portion of the second crop, that is usually saved for seed, having been cut for hay.

Again—the raising of clover for hay and seed both, does not receive the attention its importance demands in the grain-growing sections of the country. Comparatively few farmers seem to understand that instead of all the trouble and expense of putting in and taking care of an exhausting grain crop, a crop of clover, which, if well managed, would often amount to more money, and not only improve the land during its growth, but furnish materials for five times the amount of manure usually made from a crop of grain, may be raised with very little labor and expense, except the trouble of gathering, and that this is mostly done when other work is not pressing.

Nor is it as difficult to raise clover seed as it is supposed to be by many farmers. On good dry land, clover may be sown with wheat, rye or barley, and if the grain is well put in and a dressing of plaster given at the time the clover seed is sown, it will generally take well, and give a good crop. Then all that is necessary to be done in order to get a good crop of seed, is to be sure and cut the first crop in good season; from the 25th June to 4th July is usually the time. The crop of seed is generally cut the latter part of September, when other work is not driving. Getting out the seed can be done at any leisure time in the winter. The straw and chaff will go far towards paying for the operation, being valuable for bedding and manure; and when all is done, the farmer will find that he has a crop that will bring him the cash, and one that he has probably raised easier and cheaper than any other product of his fields of equal value.

There are other advantages in raising clover which may be briefly mentioned, as in consequence of its early quick growth and the depth to which the long tap root descends, clover is less liable to be affected by summer droughts than any other kind of grass usually cultivated on dry land.—So, also, where a considerable amount of feed is wanted in the middle or latter part of the season, clover, which may be cut on or before the first of July, will start again and give a good bite, sooner, perhaps, than any other kind of grass. Also in seasons of excessive drouth, clover fields that were intended for seed, will be found a valuable resource for pasture, as they will generally give a good run of fresh feed when other meadows and pastures are badly dried up. F. Orleans Co., N. Y.

TOP-DRESSING MEADOW LANDS.

MESSRS. EDITORS—The subject proposed for discussion at the Lecture room of the Agricultural Building, during the holding of your State Fair in October, viz., "The application of manures to the soil," will ever be a fruitful topic for farmers to think upon, both in the United States and elsewhere.

In all latitudes where winter prevails with as much severity as in some of the middle States, all the New England States, and the British possessions of North America, it becomes a great object with the agriculturist, to render his fields as productive as possible of nutritious hay for winter consumption and good pasture for summer feed. Upon this subject, therefore, you will allow me to make some remarks relative to New Brunswick practice.

In the vicinity of the city of St. John, there is an extensive tract of flat land, known as the "marsh," which was originally overflowed by the sea, but from which it is now kept out by an "aboideau." The marsh contains several thousand acres; and the farmers who occupy it, devote it principally to hay. Its proximity to the city enables them to purchase large quantities of manure, which, with the exception of what is applied to the production of turnips, carrots, &c., is all put upon the meadows as *top-dressing*. The land being of a spongy nature and liable to run out quickly, it is all ridged up in lands, varying in width, according to the nature of the soil. The material from the ditches is used, as far as it will go, to compost with the manure. Some farmers haul manure daily from the city, placing it in large heaps alongside fields which need it most. After the hay is taken off—from the first of September till late in the fall, the top-

	FURROW-SLICE.	
	BREADTH.	DEPTH.
* By ploughs.....	40 in.	by 6 in.
Cotgreave.....	20 in.	by 12 in.

dressing goes on—sometimes with the compost, at others with the dung. Early in the spring, after the snow goes off, and while the ground is still frozen, so that wheels will not cut up the surface, dung is hauled in and spread fresh from the wagon. The manure is principally made from horses, and there is not a great deal of straw through it, so that it spreads evenly and lies close among the roots of the grass. This land averages from two to three tons per acre, and rents frequently for £3 an acre.

In connection with the production of hay is the production of milk. The marsh farmers are all, more or less, engaged in this business; and the high condition of the meadows furnishes a large amount of fall food for the cows. Many soil their cows a good deal, and for this purpose use oats sowed thick—upon this soil oats would lodge and be worthless; but by sowing early and cutting when a foot or so high, they get two crops from the same piece of land. In this way the winter accumulation of manure is added to very materially, and, as I before stated, it is all, with a small exception, applied as top-dressing. The farmers, therefore, in this district, are firm adherents to the principal of surface application of manure; for it produces for them a great burthen of hay—an abundance of sweet pasture, and these, a well filled udder in the cow and a big manure heap at the barn.

And now, a word relative to my own practice. My farm contains a clayey subsoil, and is what may be denominated a grass farm. Some years ago I had a field which had become so run down that the hay was hardly worth cutting. In the fall I plowed about an acre in ridges and top-dressed it the following spring with barn-yard manure, at the rate of 25 loads to the acre, harrowing it in well. I sowed oats and seeded down with timothy and clover seed. The crop was an excellent one, and the catch of grass seed first-rate. The next fall I plowed the remainder of the field, and treated it in the same way.—The oats yielded at the rate of 40 bushels to the acre.—The next season the yield of grass was good; and after the spring work was over I drew to the head of the field the manure from the sheep-yard and what I scraped up around the barns, and made a compost heap with the soil of the headland—turned it over once—and applied it after haying. Suffice it to say, that my worn-out field yielded, for several years, luxuriant crops of hay and a full bite in the fall, without a particle of the fertilizing element, save the sod being plowed under. Since then I have continued to treat my meadows as the grass becomes light, in the same manner and with equally satisfactory results. J. D. M. KEATOR. *Hammond River, New Brunswick.*

BALLOON FRAMES.

[Written for the CULTIVATOR and Co. GENTLEMAN by GEO. E. WOODWARD, Architect and Civil Engineer, 335 Broadway, N. York.]

In these days of ballooning it is gratifying to know that there is one practically useful, well tested principle which has risen above the character of an experiment, and is destined to hold an elevated position in the opinions of the masses. That principle is the one applied in the construction of what are technically, as well as sarcastically, termed Balloon Frames, as applied to the construction of all classes of wooden buildings.

Since Solon Robinson's description of the mode of building balloon frames, published a few years ago in the N. Y. Tribune, there appears to have been but little further information furnished on the subject.

Who the originator was is not known; the system is not patented. The first approach in that direction is a plan for a portable cottage or tent, or a combination of both, published in Loudon's Encyclopedia of Architecture, some twenty years ago. It is more than probable, however, that the balloon frame has been known since the early settlement of the West, or after the demand for a class of buildings above the grade of a log cabin. The settlers on the prairies, remote from timber, now find, as a matter of economy, that frame buildings are the most desirable, a comfortable log cabin really costing more money; and from the fact of portable buildings or frames being pre-

pared at the mills or larger towns, and with absolute conditions of lightness for transportation and economy in construction, shows pretty conclusively the origin of the so-called Balloon Frames—a frame that, throughout the great West, is almost exclusively used in the construction of every grade of wooden buildings, from a corn-crib to the largest railroad freight depot—adapted to sustaining heavy loads; entirely secure from lateral thrust; without a mortice or tenon or brace; exposed to all the fury of the prairie blasts, it stands, with more than 30,000 examples of every conceivable size and form, a perfect success.

So general is its use west of Lake Michigan and throughout California, that a builder of the old style of timber frame would be regarded with the same sympathy as a man who prefers to travel by stage instead of by rail.

The decreased amount of timber to be used, the whole labor of chopping, hewing and framing dispensed with; the great economy in its construction, and the ease with which any intelligent man who can lay out a right angle and adjust a plumb line may do his own building, are among its recommendations.

The moment the foundation is prepared and the bill of lumber on the ground, the balloon frame is ready to raise, and a man and boy can do all of it. The sills are generally 3 inches by 6 inches, halved at the ends or corners, and nailed together with large nails. Having laid the sills upon the foundation, the next thing in order is to put up the studding. Take a 2 by 4 stud of any length, stand it on the corner, set it plumb, and with a couple of stay laths secure it in position. Nail the stud by four large nails driven diagonally, two on each side, through bottom of stud into the sill. Continue to set up studs on end, 16 inches between centers, around the entire building, and secure each in the same manner. Pay no attention to the length, for they can be readily spliced or cut off when the time comes. Leave the necessary openings for doors and windows. Some prefer to put 4 by 4 studs alongside the window frames and for door posts, and also at the corners, but they are not necessary, unless the building be a large one. The best plan for corners, and one usually adopted, is to place two 2 by 4 studs close together, so they form a right angle, that is, the edge of one stud placed against the side of the other, so as to form a corner. Next put in the floor joists for the first floor, the ends of the joists to come out flush with the outside face of the studding; nail the joists, which are 2 by 11, one to each stud at both ends and diagonally through the edge to the sill on which they rest. Next measure the height to ceiling, and with a chalk line mark it around the entire range of studding; below the ceiling line notch each stud one inch deep and four inches wide, and into this, flush with the inside face of the studding, nail an inch strip four inches wide. This notch may be cut before putting up the studs. If the frame be lined on the inside, it will not be necessary to notch the strip into the studs, but simply to nail it to the studding; the object of notching the studding is to present a flush surface for lathing, as well as to form a shoulder or bearing necessary to sustain the second floor; both of these are accomplished by lining inside the studding—(for small barns and out-buildings that do not require plastering, nail the strip 4 by 1, to the studding)—on this rests the joists of the second floor, the ends of which come flush to the outside face of the studding, and both ends of each joist is securely nailed to each stud; the bearing of the joist on the inch strip below it is close by the stud, and the inch strip rests on a shoulder or lower side of the notch cut to receive it. This bearing is so strong that the joists will break in the center before the bearing gives way.—No tenoned joist in the old style of frame will hold half the weight.

The joists being nailed securely to the side of each stud, the lateral thrust caused by heavy weight, as hay, merchandize, &c., is in the direction of the fibre of the wood.

The tensile strength of American White Pine is sufficient to sustain 11,800 pounds* for each surface inch in its cross section. Medium bar iron will sustain 60,000 lbs. per square inch of its cross section surface, so that white pine

* Authority, C. H. Harwell.

pulled or strained in the direction of its fibre is equal to nearly one-fifth of the strength of iron. If, in erecting a building, we can so use our materials that every strain will come in the direction of the fibre of some portion of the wood work, we can make inch boards answer a better purpose than foot square beams, and this application of materials is the reason of the strength of balloon frames.

When the building is designed for storage, it is customary to set an outside strip into the studding at the ends of the building on which to nail the ends of the flooring, so that the thrust of the building endways is in the direction of the fibre of the flooring, and sideways, as before stated, in the direction of the fibre of the joists.

We have now reached the second floor. A third floor, if required, is put in in the same manner. Having reached the top of the building, each stud is sawed off to an equal height; if any are too short they are spliced by placing one on top of the other, and nailing a strip of inch board on both sides. The wall plate, 1 by 4 inches, is laid flat on top the studding, and nailed to each stud; the rafters are then put on; they are notched, allowing the ends to project outside for cornice, &c. The bearing of each rafter comes directly over the top of each stud, and is nailed to it. Put in the partitions, and the balloon frame is complete, and in labor, strength and economy stands unequalled. If lined inside of the studding with common lumber, and clapboarded outside, it is beyond the reach of harm from any test within the bound of reason, and, I will venture to say, unapproachable in strength and durability by any form of the old fashioned style of frame.

This style of frame can be used with confidence for barns of all sizes, for all manner of dwelling houses, out-buildings, &c., and can be put up by anybody of the least mechanical genius. In Rural Architecture it is a good desideratum, and although ridiculed by eastern mechanics, it will assume the same importance that it has and still occupies in the West.

There are many different plans for building these frames. Some lay the first floor, and commence the frame on top of it—others, for small buildings, put in the studding 4, 6 or 8 feet apart, with horizontal strips between, which is a good plan where vertical siding is used—others tenon the studs and mortice the sills—not desirable, as it injures them, makes more work, and hastens the decay of the timber.

A first class balloon frame should be lined, if for vertical siding, outside the studding—if horizontal siding is used, line inside; it makes the frame stiffer and the building warmer. Some line diagonally, say from center next the first floor towards extreme upper corners both ways; others line one side diagonally in one direction, and the other in an opposite direction. This makes assurance of strength doubly sure. If lined inside, nail perpendicular lath to the lining 16 inches from centers, and on this lath horizontally for plastering.

If the house be much exposed, fill in between the studding with brick turned edgewise, and laid in mortar.—Put up in this manner the balloon frame building is as warm as any other known style of wooden building. No Hook and Ladder Company could ever pull it down; they might roll it end over end, like a basket, and with as little success of destroying it.

It has been thoroughly tested in every position, and found fully adapted to every known want for which wooden buildings are required, mills and manufactories excepted. Buildings for storage should have timber adapted for their uses; but the cutting of mortices and tenons, and boring auger holes, thus reducing a heavy stick of timber to the strength of one very much smaller, is a decided mistake. If the rural community want stronger buildings at a much less price, let them adopt the balloon frame.

COW STABLES.—G. C. Warren of Medina Co., Ohio, writes to the Ohio Cultivator, that he has secured clean cows by raising the floor where they stand two inches above the remainder of the floor, and just long enough for them to stand upon—from four to five feet—according to the size of the cow. They lie on the raised floor, while the manure falls below.

THOUGHTS SUGGESTED BY "LIEBIG'S LETTERS."

The COUNTRY GENTLEMAN has lately contained a series of articles in review of the last publication from the pen of this distinguished chemist. We cannot make room for the whole of them in THE CULTIVATOR, but have selected the following extracts:

The Nutrition of Plants.

In the interior of the plant, chemical changes are perpetually going on, which convert potash, ammonia, phosphoric acid, &c., into parts of its solid tissues, thus removing them from its juices or sap. Even a portion of the water, which this movement excites as the chief ingredient of the juices of a growing plant, becomes shortly a part of the plant itself—is solidified in the shape of starch or sugar, or other substance.

Now, let a plant be situated in the soil with its roots in contact with soil water, (which is often mere moisture, but is, nevertheless, always water holding in solution, in all fertile soils, a sufficient though exceedingly minute portion of mineral matters,) and the way in which it is fed is as follows:

By the chemical changes that occur in the plant, the various substances that now are contained in it, in the liquid form, viz., water, and the well known organic and mineral ingredients of the vegetable juices, are being constantly removed from solution, and deposited in the solid form. *If, then, there exist externally to the plant, matters that can restore the original composition of the juices, these matters must diffuse through the root cells of the plant inwardly, and restore the osmotic equilibrium.*—Thus the plant behaves toward all the substances which it requires for food, just as a piece of caustic potash towards carbonic acid gas, and no matter how dilute the solution of these bodies may be, they are still accessible to it.—Thus, in the water of the ocean grow the sea weed, which, having one slight point of attachment to the rocks, spread out an enormous surface to the water, and gathers from it not only the common salt which is so large an ingredient of its native element; but also the much rarer potash, phosphoric acid, &c.; and in addition to those ingredients ordinarily met with in land plants, the interesting element, *iodine*, is found in them. The iodine of commerce (extensively used in photography, and misused in medicine,) is nearly all obtained from the ashes of sea weeds, yet this body is doubtfully, or not at all detectable even in the concentrated mother liquors coming from large quantities of sea water, though the chemist possesses the most delicate tests for it, being able to recognize it with the greatest certainty when it forms but 1-100,000 of a liquid.

The fact that sea-weed, or the plants that are reared in close green-houses, or in Ward's cases, where no evaporation of water from their leaves can take place, and where consequently much *transpiration* of water is out of the question, demonstrates that there is no connection between the amount of water exhaled and the quantity of matters absorbed by vegetation.

Liebig versus Lawes.

Latterly we hear more abroad than in this country, of the "mineral theory" of Baron Liebig, and the "nitrogen theory" of Lawes, Stockhardt and others; and there has arisen in Germany and England, a long and bitter controversy between the representatives of these theories. Each of the opposing parties in this conflict would lead their readers to suppose that the other side of the question from theirs was utterly wrong, and could be maintained only by the hopeless victims of prejudice and ignorance.

On the one hand the impression is conveyed that Liebig regards ammonia, (nitrogen,) as of trifling importance as a manure. On the other, it has been distinctly gathered by the lookers on, that Lawes is satisfied that agriculture has all its wants supplied, if only ammonia (and phosphoric acid) can be had in abundance. But if we look carefully into the matter, we find that the disagreement is, after all, more in expression than in idea. Both Liebig and Lawes believe that phosphoric acid and ammonia are indispensable; both believe that the alkalies, earths and other ingredients of the ash of plants, are necessary to the growth of

vegetation. They differ in their estimate of the relative importance of these ingredients, and of the precise function which some of them perform. * * *

Now, while it is perhaps true that Lawes has attached undue importance to the direct effects of ammonia, it is also true, as has been remarked, that Liebig by his ingenious advocacy of the opposite view, has left the impression in the minds of many of his readers, that he attaches no value to artificial supplies of ammonia. Many isolated paragraphs of his late writings, do indeed justify such an impression, but if we take the trouble to get at the true meaning, by comparing different chapters of this book, we find his ideas are tolerably correct.

The argument of Baron LIEBIG is essentially as follows: The atmosphere is an unfailing and sufficient source of nitrogen, as shown by its supplying all the wants of the most luxuriant natural vegetation, and by the fact that this element accumulates in the soil of prairies and forests. Those cultivated crops, too, in which the most nitrogen is removed from the field, (peas, clover, and root crops,) are those which, in practice, are found to be least benefitted by nitrogenous manures; and, therefore, we must seek to explain the action of such manures on other crops, as the cereals, whose growth they favor so greatly, by some indirect effect. This view is further supported, according to Liebig, by the fact that all soils, even those which are infertile, contain a large amount of nitrogen, immensely greater than is yielded by the heaviest dressings of guano. Our author thus teaches us that,

"As our cultivated plants undoubtedly absorb through the leaves as much nitrogenized food, in the form of ammonia and nitric acid, from the air, as well as dissolved in rain and dew, as uncultivated plants which receive no nitrogenized manure from the hands of man; we can therefore conceive that the agriculturist will seldom have to seek the reason of his poor crops in a deficiency of ammonia or nitrogenized food alone."

Effects of Nitrogenous Manures.

It has been abundantly proved by many experimenters, but especially by Lawes and Gilbert, that the use of ammonia alone, in many cases is sufficient to increase the wheat crop by one half or more, even when phosphates, alkalies, &c., are present in excess, while phosphates alone have made a crop of turnips, on soil that without them yielded no crop, no matter how much ammonia was added.

These facts point to the difference in the nature of various plants, as the true explanation of the contrary effects of manures, and it is most undoubtedly true, that while the natural supplies of ammonia or nitrogenized food, are more than sufficient for the natural vegetation of a country, or for large leaved and slow-growing plants, they are insufficient for some of the cereals whose period of growth is short, and whose foliage is scanty.

This principle Liebig arrives at in his sixth letter, and there he unfolds its bearing and application in a highly instructive manner, and fully admits the value of nitrogenous fertilizers, although before he seemingly opposes any such admission, and in fact directly contradicts himself.

Liebig on Stable Manures and American Farming.

Green-manuring, or the use of stable manure made from the produce of the farm, adds nothing but organic matters to the soil, and Liebig, by a single stroke of incomplete, and therefore, in effect, false logic, is led to assert the dogma that "the presence of decaying organic matter in a soil, does not in the slightest degree retard or arrest its exhaustion by cultivation," it being "impossible that an increase of these substances can restore the lost capacity for production."

Liebig goes on to declare that all the modern devices of high farming, the use of guano and similar manures for the purpose of growing fodder with which to make more yard manure, are only a more systematic, elaborate, and speedy method of exhausting the soil and impoverishing the nations.

"The European system of cultivation called high-farming, is not that open system of robbery of the American farmer, followed by the utter exhaustion of the soil; but it is a more refined species of spoliation, which at a first glance does not look like robbery. It is spoliation accompanied by self-deception, veiled under a system of teaching, the very basis of which is erroneous."

He quotes the Roman agricultural authors, Cato, Virgil, Varro, Columella and Pliny, to show that in their time, high-farming was well understood in its essential points, and declares that "all these rules had, as history tells us, only a temporary effect; they hastened the decay of Roman Agriculture."

The farming of this country is employed as the gloomiest illustration of the "spoliation system." We are well aware that there is abundance of bad farming in this country; but we were not prepared to learn that the ruin of our agriculture is so impending. We know, indeed, that "the early colonists in Canada, in the State of New-York, in Pennsylvania, Virginia, Maryland, &c., found tracts of land which, for many years, by simply plowing and sowing, yielded a succession of abundant wheat and tobacco harvests; no falling off in the weight or quality of the crops, reminded the farmer of the necessity of restoring to the land the constituents of the soil carried away in the produce,"—but it is hard to believe what our author further asserts. He says: "We all know what has become of these fields. In less than two generations, though originally so teeming with fertility, they were turned into deserts, and in many districts brought to a state of such absolute exhaustion that even now, after having lain fallow more than a hundred years, they will not yield a remunerative crop of a cereal plant."!

Nature's Supplies of Mineral Food.

It is not needful to return as much mineral matters to the soil as are removed in the crops, in order to keep up the fertility of a country. If it were, then the inevitable result of certain natural causes would depopulate the globe. The rains, the rills, the rivers, all the sea-ward tending waters are perpetually carrying down detritus and solved matters to the ocean, in quantity a million-fold greater than man's best devices can return; but the soil does not for that reason grow poorer. The soil is given to man to use. The materials from which it is made exist certainly in inexhaustible quantity, and for the most part, the soil itself is inexhaustible. If we calculate how many crops are represented by the materials of the soil, we find that on the whole, there is an immense margin for removal, before exhaustion can occur. There are large tracts of country the soil of which is easily exhausted, and slowly replaces itself from the underlying rocks; but on the other hand, there are enormous stretches of territory the soil of which is perpetually and rapidly renewed from subjacent strata of crumbly shales, and others again occupied with a rich soil to a great depth, capable of supplying the mineral materials for thousands of crops.

It is true, that by constantly removing and never restoring, the soil is exhausted. It is true that even the wheat fields of Southern Russia and our Western Prairies, suffer a reduction of fertility by constant cropping; but it must not be forgotten that these soils, which supply the chief exports of agriculture, restore themselves to such a degree that by the simplest art they maintain their fertility perfectly!

The census returns, notoriously imperfect in themselves, do not take at all into account the ravages of insects, the influence of adverse weather, and other causes which conspire to diminish the yield of wheat in the "Genesee country," and accordingly facile writers of the alarmist order, have made it believed abroad that the garden of New-York is almost a desert, while the fact is that the soil there is still extraordinarily fertile. True, their power of production has fallen considerably, but only to such a point that by plowing in clover one year, a perfect crop of wheat is obtained the next; and we are assured that under such treatment, farms in that region have not diminished a whit in their productiveness for 20 years.

Our Doctrine.

Our doctrine is, that every soil admits of the removal of a certain portion of its mineral matters, without impoverishment or danger of exhaustion. The quantity that may thus be removed, is that which a field yields naturally by the simplest tillage, and without manure. It is what the weathering each year renders soluble and available.—The use of manures, or of more perfect tillage, is to supply

the excess of matters contained in a full crop over what is contained in the partial one which the unaided soil may yield. It is not necessary on a fair soil, to add as much mineral matters as are taken off, in order to maintain its usual productiveness, and if to any soil, other things being properly adjusted, we add *as much* as is taken off, we increase its fertility, because, then, the disintegrating process constantly increases its floating or available capital.

If, as Liebig's doctrines would demand, the only proper Agriculture—the only plan of farming not ruinous and a system of robbery—consisted in restoring annually to the soil as much mineral matters as are removed in the crops, how impossible it would be to farm profitably in the long run—how impracticable to avoid leaving to our heirs an impoverished soil!

Facts, Opinions and Notes.

[Collated from Books and Papers for THE CULTIVATOR.]

WHEAT—EIGHTY BUSHELS PER ACRE.—S. P. Mason of Walnut Creek, N. Y., tells the New York Tribune how he grew wheat *at the rate of 80 bushels per acre*. "He inclosed with boards an exact rod of dry, gravelly soil, and spaded it eighteen inches deep, mixing in well-rotted clayey turf sifted, to the amount of a cart load, and a peck of salt, half a bushel of ashes, and one pound of guano. Then marked the bed into squares of three inches, and planted, Sept. 10, one grain in a hole two inches deep in the center of each square, using nine grains to each foot, which he thinks is too thick. It came up in eight days, and by Dec. 1 it was a perfect mat, so that the ground was hidden. On this he sifted three pecks of charcoal dust, and when the snow melted off in March the wheat was very green. It was watered a little in a dry time, and harvested July 10, after the birds had taken a share, and dried, and the grain weighed 29½ pounds. He says if it had been undisturbed by birds the yield would have been full 30 pounds—that is half a bushel per rod square, or at the rate of 80 bushels per acre. The seed was called "California wheat," but whether bald or bearded, white or red, he does not say. Nor does he say whether it would pay to cultivate on a large scale for 80 bushels per acre."

SMUT IN WHEAT—AN EXPERIMENT.—An experiment is related in the Rural New-Yorker, where three plots of ground exactly alike were sown with wheat to test the cause of smut. The first was sown with smut wheat, and [of course] did not grow. The second was sown with bruised wheat, broken in threshing, which some think the cause of smut. A few kernels grew, but produced no smut. The third plot was sowed with good wheat rolled in smut until the kernels were entirely black with it. The product was *one-half* smut wheat.

OATS AND GRASS IN ROTATION.—A writer in the Boston Cultivator proposes the devotion of the farm principally to oats and grass—would plow up old meadows and pastures in summer, and sow the next spring to oats—seeding again to clover, timothy and red-top. After remaining in grass two years he would take another oat crop, and so on in a 3 years rotation. If the oat crop succeeded well on inverted sward land, it might pay—but we have never found it to do so. If one was sure of getting grass with oats it might pay, but there is *great* risk of a bare stubble instead of a well stocked grass field.

HEDGES.—A late number of the Rural New-Yorker has several communications from those who have tried hedges. One in Illinois, who had previously discovered that the Osage Orange was too tender, found that the objection was entirely obviated by shearing at the close of summer, which shortened the growth and made the whole hardier. He has experimented five years—three without shearing, and with failure; and two with shearing, and with entire success. Another correspondent, at Troy, N. Y., tried Hawthorn, but the borers are destroying it rapidly. He has also tried the Newcastle thorn, but although it escapes the borer, it makes a poor hedge. He finds the privet to grow admirably, but the handsome hedge it forms is rather too weak for the farmer.

NEW-YORK STATE AGRICULTURAL COLLEGE.

"The chief object of the institution is to provide a system of instruction essential and practically useful to the Agricultural interests of the State; to combine theory with practice; to afford wholesome discipline to the mind, accumulation of knowledge, and habits of labor and industry."

We think we are only expressing the uniform sentiment of the Agricultural community, when we say we have watched the foundation of the institution,—at the head of whose proposed course of instruction stands the above paragraph,—with not a little anxiety for the result of the experiment. So much seems to us to depend upon its success or failure—the future interests of Agricultural education in the United States appear to be so intimately connected with a project now matured at the expense of much thought, money and time, and which from the position of the State not less than from that of the gentlemen who have been engaged in it, must ultimately lead to great good or to great disappointment—that, in common with every thinking observer, we could not but desire to give all possible encouragement to its friends and managers. And now that a new President has been chosen, and a programme of operations laid before the public, this desire becomes stronger than before. It has been intimated that the President and Trustees propose during the winter to lay the merits and prospects of the College before the farmers of the State, and we bespeak, what we are already sure they must receive, a candid hearing and attentive regard of the facts and arguments they may present.

We condense as concisely as possible, the "outline" which follows the paragraph we have quoted above:—

"Course, three years—two Terms annually. Requisites of Admission—the reading, writing and grammar of the English language, and higher arithmetic; sixteen years of age, and good moral character. Instruction, board, lodging, lights and fuel, \$200 per annum—one-half semi-annually in advance.

"The studies of the first year are the English language, Arithmetic, Algebra, Chemistry, Mineralogy, Geology, Botany and Geometrical Drawing. Of the second—Trigonometry, Analytical Geometry, Surveying, Construction of Roads, &c., Agricultural Chemistry, Mineralogy, Geology and Botany continued, Outlines of Comparative Anatomy, Vegetable Physiology, and Drawing"—that is, in the Summer Term alone—the Winter Term is to include "Descriptive Geometry, Engineering, Carpentry, Bridges, &c., Natural and Experimental Philosophy, Agricultural Chemistry, Mineralogy, Geology and Botany reviewed, Human Physiology, Geology and Comparative Anatomy continued, Principles of Veterinary Practice, Book-Keeping, Drawing, Farm Implements, Machinery, Architecture, &c." Of the third year—summer term—"History of Literature, General and Agricultural, Physical Geography, &c., Intellectual and Moral Philosophy, Rhetoric and Logic, Constitution of the United States and of the State of New-York; Laws of New-York relating to Contracts, Highways, Fences, &c.; Book-Keeping applied to the Farm; Entomology, Ornithology, Acoustics and Optics." For the winter term—"Astronomy, Electricity, Magnetism, Meteorology, Intellectual and Moral Philosophy, (including Evidences of Christianity and Natural and Revealed Religion,) Rhetoric and Logic continued, Veterinary Practice; Drawing of Animals, Landscape, Composite, &c."

This is certainly a comprehensive list. In the intervals of leisure enjoyed, the freshmen and juniors are to be instructed successively,

"In plowing, spading, care of hoed crops, gathering hay and grain crops, management of the dairy, &c., making and preserving manures, care and feeding of store animals, root and stock grafting, taking and preserving scions, &c., sowing grain, planting, gardening, setting trees and shrubs, making fences and walls, draining and irrigation, training, pruning, grafting and budding, handling teams, loading wagons and carts, collecting specimens of plants, minerals, &c., fattening, breeding, and rearing stock, training steers, handling cattle, training colts to saddle, harness or draught, preparing timber for fences, posts, &c."

An etc. marks the end of each term in this enumeration of the out-door branches of attainment which are promised in two years. The Seniors are to make Topographical Maps for various purposes, collect specimens, have practice in Essays and Lectures, experiment in the laboratory, take charge of *all experiments* in fattening and feeding stock, "&c., &c."

In order to "apply the Theory to the Practice of Husbandry," both of which are supposed to be reflected, respectively, in the in-door and out-door pursuits thus recapitulated, the "students will be required to spend such time in the field as may be necessary."

We have not space for further particulars or remarks. These general facts are submitted for the reflections and conclusions to which they may bring the reader.



'CHESTER EMPEROR'—a Suffolk Horse—the property of G. D. BADHAM, Esq., Essex, England.

THE SUFFOLK HORSES—"CHESTER EMPEROR."

By turning to the account of the Suffolk (England) Agricultural Show, contained in our foreign correspondence, in the last volume of this paper, it will be seen that a sweepstakes prize of \$150 open to all England, was won, together with several other premiums, by G. D. BADHAM, Esq., of Bulmer, in the adjoining county of Essex. A portrait of the winning horse, already notable for previous successes, was published in the July number of the London Farmer's Magazine; and we have taken the opportunity to re-engrave the cut for our columns, because its subject has been so generally and authoritatively pronounced a first-class specimen of a breed most valuable to the English farmer. Whether it would be sufficiently capable of bearing our more severe extremities of heat and cold, and of showing the greater activity of which we are so fond, to be worthy of general introduction among us, is perhaps an open question. In the head and legs, often we find it exhibiting a neat, clean and "blood-like" appearance, unrivalled by any other heavy breed, and its compact and muscular frame possesses a weight which the low position of the shoulder is such as to throw into the collar with an immense power. We have no doubt that an infusion of Suffolk blood would prove an improvement upon our draught horses in the city, perhaps quite as much or still more than in those employed strictly for agricultural purposes.

It is scarcely necessary for us to recapitulate the prizes obtained by "Chester Emperor." He was bred by Mr. BADHAM in 1854, and won a premium as a colt in June of that year—making thus an early and auspicious entrance upon public life. He is described, in the language of our contemporary, as

"A red chestnut horse, with a few grey hairs shot here and there through his coat. He stands something over sixteen hands high. He has the most beautiful blood-like head perhaps ever seen on a horse intended for "agricultural purposes." He has a strong neck and fine crest, good oblique muscular shoulders, deep girth, and first rate loins and quarters. His hocks and arms are also excellent; and he has a small but good foot. He stands short on the leg; and this, with his fine quarter, makes him a very lengthy-looking horse, but still with a short powerful back. Emperor is, altogether, one of the most handsome and symmetrical cart-horses ever seen, possessing in perfection those three leading "points"—great strength, fine quality, and capital action.

We think we had a partial promise from Mr. BADHAM, in parting after a stroll together over the castle and

grounds of the king-making WARWICKS,—that we might sometime or other indulge the American privilege of question-asking, in respect to Agricultural matters; and we know that our readers and ourselves would be equally interested in obtaining some information from one so well qualified to give it—as to the breeding and improvement of agricultural horses in the eastern counties, and the probable success with which the Suffolk Punch* would bear our climate. It has been intimated that the breed does not show the activity and nimbleness now, for which it was once noted. We shall be glad to know if breeders have overlooked this point in the pursuit of others, or whether, on the other hand they consider it to have been really maintained.

HOW TO MAKE BARN-YARDS.

As your correspondent TYRO, has asked this question, I will answer it, giving my plan. First, make the yard level, (large or small,) then commence in the middle and scoop out in the form of an apothecary's scale, deepest in the middle, to the depth of one foot in the deepest place.—Then collect straw, leaves, old hay, bog grass, saw-dust, or any thing that can be made into manure; fill it up level, with a row of mangers around the outside; then have living water in the yard, and when you commence foddering shut the bars or gate, and keep every creature in the yard when not in the stable; then fill up with litter to give them a good bed, and keep doing so until spring, and the manure is three feet deep or more if possible.—Then dispose of it as best you can. Some let it remain until fall and use it for top-dressing; others cart out in spring, and commence filling up again to keep the weeds from growing.

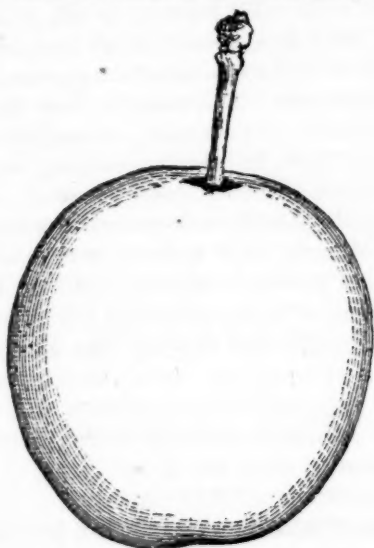
A dry yard is good for nothing to make manure in, while one made from six to twelve inches dishing will always be dry around the outside, and the dish will hold water enough for the mass above to suck from. Have good evertroughs on all the buildings, to keep out all the water possible. Spread the horse manure from the stable over the yard as fast as made. Sprinkle in ashes, plaster, muck, turf, chaff, &c., and waste nothing, and you will soon have a pile of manure that would greatly astonish some that (falsely) bear the name of Farmers. L. F. SCOTT. Beth-lehem, Conn.

* "THE SUFFOLK PUNCH"—so called from his round, punchy form."
—YOCATT.



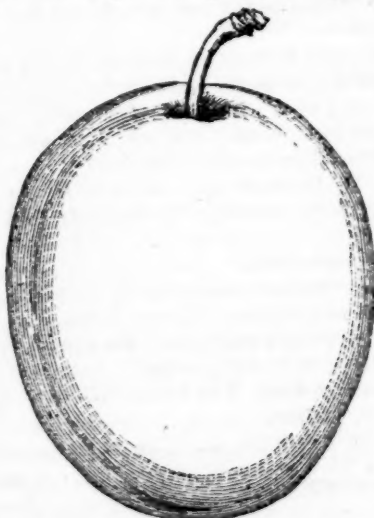
A BASKET OF PLUMS.

For some years past the dwarf plum orchard on the grounds of Ellwanger & Barry, of Rochester, has excited the admiration of all who have visited their nursery at the time of ripening. The high culture, skillful pruning, and assiduous labor in destroying the curculio, bestowed on these trees, have given results which we have never seen excelled and rarely equalled. Those magnificent varieties, the Bradshaw, Pond's Seedling, Victoria, Sharp's Emperor, and Goliath, loading the bending branches which sustain them, are a sight to view! At a recent visit, they presented us with a basket of several specimens, each of a large number of sorts; and as many of them are comparatively new, we believe it will be an acceptable service to our pomological readers to give figures and descriptions of some of the most valuable and interesting varieties.



NELSON'S VICTORY.

NELSON'S VICTORY.—Medium in size, roundish oval, brownish yellow, with some dull red, stone small, free, juicy good. Its origin is English; the growth is vigor-

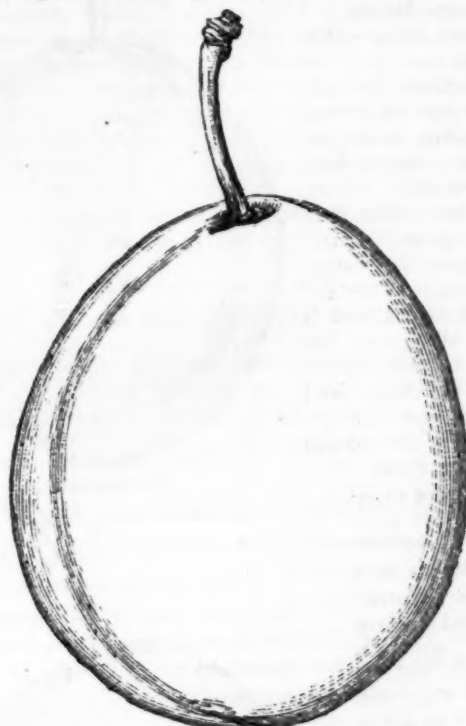


SHARP'S EMPEROR.

ous, and it is exceedingly productive, which, added to its beautiful appearance, will make it fine for market.

FOTHERINGHAM.—An old English variety from Surrey, in form like the Imperative, very productive, of fine quality, juicy, of a pleasant, fresh flavor; improves by shrivelling on the tree—valuable.

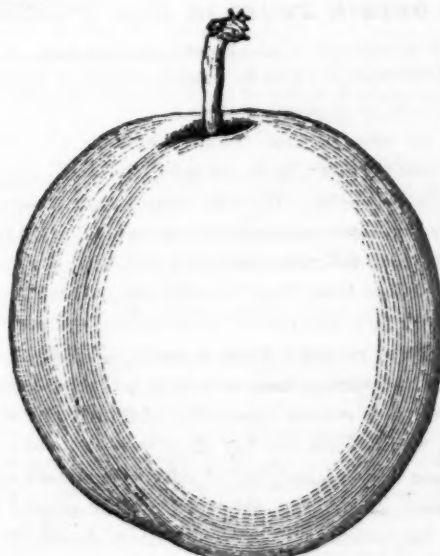
SHARP'S EMPEROR.—One of the best market sorts, large, handsome, very showy, resembling Victoria, but the tree is more regular, not so vigorous, and the shoots less downy.



BRADSHAW.

BRADSHAW.—This is a plum of foreign origin, remarkable for its large size, productiveness, and vigorous growth of the tree—qualities rendering it eminently valuable as a market variety. It was described by P. BARRY in the Horticulturist for 1855.

It is of largest size, a large portion of the specimens on thrifty trees measuring two and a quarter inches long, and an inch and seven-eighths cross diameter. It is oval in form, inclining to obovate, sometimes with a very slight neck; suture obtuse; color, dark purple, with a light blue bloom; stalk three-fourths to one inch long, set in a narrow cavity; flesh a little coarse, becoming light brownish purple, at first adhering, but nearly free from the stone when fully ripe; juicy, good, slightly acid; tree erect in growth, vigorous; shoots purple, smooth. Ripens through the two last weeks of summer.



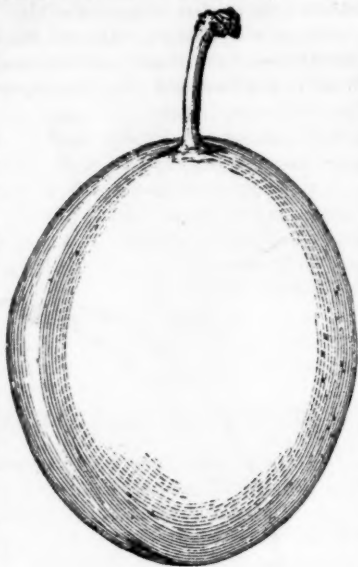
GOLIATH.

GOLIATH.—Large and handsome, roundish oval or roundish oblong, usually larger on one side of the suture, color deep red or greenish yellow, dark purple in the sun, and

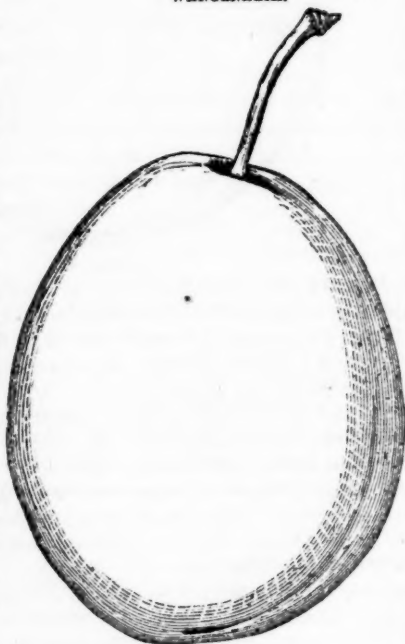
somewhat mottled; stalk in a very deep and narrow cavity; flesh light brownish yellow, adhering somewhat to the stone, juicy, rather coarse or fibrous, with a brisk, sprightly flavor—"good." English—a strong grower and very productive, and bears young—profitable.

WANGENHEIM.—Medium in size, oval, suture shallow but distinct, color dark blue, stem rather short, set without depression; flesh greenish yellow, juicy, firm, sweet, rich, "very good," partly free from the rather large stone. This is of German origin, and is a sort of prune; the growth is erect, moderately vigorous, and the tree very productive—it is one of the best of its class.

VICTORIA.—Large, obovate, suture distinct, stem half an inch long, in a rather deep and narrow cavity; color a fine light reddish purple; flesh yellow, pleasant, "good," adhering to the stone. It has been long known in some parts of England—stands next to Pond's Seedling in size and beauty, and in productiveness, and is a great grower, rather irregular. It is distinct from and better than Sharp's Emperor.



WANGENHEIM.



VICTORIA.

TO OBTAIN FRUIT IN NEW PLACES.

"I have just come into possession of a new residence, in a region where fruit generally does well, but there is nothing on it in the shape of a fruit tree or shrub, worthy of the name—what can I do to have an early supply of fruit of my own? G."

This is an inquiry that often occurs in the minds of many owners of new places, or who have built new houses on unimproved spots. We can inform such residents that much may be done towards an immediate supply, with proper selection and management—and that the assertion which they often hear, that "it will take a life-time to get fruit" from a new plantation, is an absurd error.

The quickest return is from planting *Strawberries*. If set out early in spring, they will bear a moderate crop the same season. We have repeatedly obtained fine ripe berries seven weeks from the day they were set out; and in one instance where transplanted late with a ball of earth to each plant, in less than six weeks. The second year, if the bed is kept clean, the product will be abundant. Wilson's Albany will safely yield any year, a bushel from a square rod, or about two quarts a day for half a month.

Muskmelons and *Watermelons* will yield their delicious products four months after planting.

Gooseberries, Currants, Raspberries, and Blackberries, all bear at about the same period from the time of setting out. Good-sized gooseberry plants, say a foot and a-half high, will give a good crop for bushes of their size, the second year. We have had a bushel of Cherry currants, the third summer after setting out quite small plants, from a row thirty feet long. A bush of Brinckle's Orange raspberry has been known repeatedly to bear about a hundred berries the same year that it was transplanted—the fruit, however, was not full size.

Dwarf Pears of the right sorts, and under right management, come quickly into bearing. If at the common age when set out, or two years from the bud, the most prolific sorts give some returns the second year, and more afterwards. Older trees, if carefully removed, produce larger crops—we have seen a tree of the Louise Bonne of Jersey, six years old when transplanted, bearing a bushel the second summer afterwards; but much care is required for removing such large trees, and they are not subsequently so thrifty as younger ones, and consequently do not yield such excellent fruit. Among the dwarf pears which bear soon, are Louise Bonne of Jersey, Doyenne d'Ete, White Doyenne, Giffard, Fontenay Jalousie, Josephine de Malines, &c. The following sorts bear nearly as early on pear stock, viz: Bartlett, Seckel, Winter Nelis, Washington, Onondaga, Howell, Passe Colmar, Julienne.

Grapes afford fruit soon—usually beginning to bear the second and third year. The Isabella, York Madeira, Diana, and Delaware, are particularly recommended for this purpose at the North, and the Catawba may be added for the Middle States, wherever it does not rot.

Dwarf Apples should not be entirely overlooked in the list of early bearers. Half a peck per tree is often obtained the third year from the most productive sorts.

A good supply of all the preceding will be sufficient to furnish a family with these wholesome luxuries from within a year or two of occupying entirely new premises; and will not only add greatly to the comforts and attractions of home, but contribute materially to the uniform health of the occupants.

GRAFTING CURRANTS—PAINT FOR WOUNDS, &c.

EDS. CULT. AND CO. GENT.—I wish to inquire if the currant can be successfully grafted? I have some Red Dutch currant bushes three years old from the cuttings, which I wish to engraft with some of the newer varieties next spring. Please to tell me how to do it. Should it be done early?

I also have some fine old apple trees, thrifty and sound, excepting that where large limbs were pruned off many years since, holes have rotted into the trunk large enough to hold a quart or two—can you tell me how to make a composition for filling up these cavities?

Would not Bridgewater paint be excellent for covering the wounds made by cutting off large limbs? I have used the alcohol solution of gum shellac, but upon the whole I prefer yellow ochre paint.

Should winter pears be picked early or late? Some say pick early, others say late. I have found that when my winter pears are picked early, they are apt to shrivel and become tasteless, dry and leathery. An answer to the above questions through THE CULTIVATOR, would greatly oblige W. D. Mass.

The currant is rarely or never grafted, because it grows so freely from cuttings—to be successful the grafting should be done very early in spring, as the currant starts soon.

The decayed portions of the apple should be cut out or shaved off, and the wounds covered with shellac, paint, grafting-wax, or with a mixture of tar and ochre applied

warm. Brickdust, or pounded dry clay sifted will do in the place of brickdust. We do not know the character of Bridgewater paint.

Winter pears should be picked when fully grown. If green and imperfect, they will shrivel, or rot, and never ripen into melting delicious fruit. Many pronounce winter pears valueless, because they give them such poor culture that they never properly mature.

APPLES FROM MAINE.

We were kindly furnished when at the Maine State Fair, by S. L. GOODALE, of Saco, with a large collection of the specimens of apples exhibited on that occasion, a brief notice of which may be interesting to our eastern readers. Among those of most interest were the following:

Billy's Pippin.—A fine, large excellent fruit, round-ovate, smooth, handsome, shaded and indistinctly striped with rich red on fine yellow ground; the flavor sub-acid and "very good;" worthy of further attention.

Watson's Favorite.—A handsome apple, medium in size, roundish-oblate, regular, smooth, with a fine reddish blush on a yellow skin; flesh yellowish, juicy, flavor pleasant, rich, sub-acid, "very good."

Winthrop Greening.—This has been long known as one of the best autumn apples of Maine. It is large, rather oblate, tapering slightly to the crown, slightly ribbed, skin yellow with a little green, sub-acid, "very good."

Blue Mountain Sweet.—A fair fruit of medium size, roundish and slightly oblate, greenish yellow with a shade of brown; flesh, fine grained, solid, flavor "very good" for a sweet apple.

Bartlett Seedling.—A large, roundish, ribbed apple, striped and splashed with bright red on yellow skin—flavor mild sub-acid, "good," or perhaps "very good."

Black Oxford.—This variety has already some celebrity as a long keeper—it is nearly of medium size, roundish, dark red; the flesh white, tinged with red, fine-grained, firm, compact, moderately rich, sub-acid, "good."

Payette Black.—Medium in size, roundish, dark dull red, tender, sub-acid, pleasant and agreeable; "good," perhaps "very good."

All of the preceding appear to possess considerable merit, and some are evidently quite valuable. We should esteem it a favor if our friend GOODALE would furnish some further facts in relation to the new sorts, their time of maturity, vigor of growth, degree of productiveness, extent of culture, or whether well known or quite local, &c.

GRAPE CULTURE IN CENTRAL NEW-YORK.

MESSRS. EDITORS—In reply to the inquiries of your correspondent, and in response to your own request, I will venture an opinion in reference to the best grapes for this part of our State.

If your correspondent desires to know what grapes are best for general market purposes, I should say, the Hartford Prolific, Concord, and Isabella. The Hartford Prolific bears abundantly, ripens earliest, and is quite palatable.—The Concord follows the Prolific, only a few days behind; is large and showy, both in its berries and clusters, and when eaten at just the right time, is of quite good quality. The Isabella should be planted, of course; for though it seldom becomes fully ripe, it generally becomes blue, and quite pleasant to the taste. It is a great bearer, and prolongs the grape season after the sorts just named have passed away.

I will just add here, that the Logan *promises* now to be an earlier grape than either of the above, and it is thought will not be inferior to any of them in quality.

The three grapes first named should be the planter's main reliance. But as some people will want to buy finer sorts, he had better set out a few Dianas and Delawares. The Delawares will be ready for market along with the

Concords, and the Dianas along with the Isabellas, or a week before.

If, however, your correspondent is an amateur, and wishes a good assortment for the supply of his table, I should say—leaving a place for the Logan, in case it fulfills its present promise—plant one vine each of Hartford Prolific and Concord, but devote your ground chiefly to the Delaware, Diana, Rebecca, and Isabella. An occasional taste of the Prolific and the Concord, will serve to show you the superiority of the others.

Several other grapes are now being tested in this region—such as the Anna, Clara, Child's Superb, Louisa, King, &c.,—but their character has not yet been sufficiently proven to warrant an opinion upon them at present.

Clinton, N. Y.

A. D. G.

P. S.—If a grape can be found, which neither boys nor birds will steal, I should advise putting that at the head of the list. G.

STARTING BLACKBERRY CUTTINGS.

EDS. CO. GENT. AND CULTIVATOR—According to promise I send you the plan I pursued with my blackberry cuttings. I had a hot-bed of fifty sash ready for cucumbers with a strong under heat. I smoothed the surface under five sash at one end of the bed. I then spread the cuttings on the surface of the bed, and covered them about two inches with light mould, and then put on the sash and tended them the same as the cucumbers, and in five days they commenced coming up, and in ten days the bed was covered with briars from one to six inches high. I now took the sash off in warm and moist days, and put them on again at night, and by April 20th I had plants eighteen inches high, which was twenty days from the time I started them; and on 22d of April I set out a few of the strongest, and although there were several very hard frosts they started and grew finely. May 9th I set out another lot which did very well. May 20th I set out another lot which on account of the ground being too dry, about half died—the remainder started slowly. June 1st I set out another lot which did well.

Now for the result, (Nov. 1st)—the first planting will average four feet high, and very branchy and strong; the second is fully as good as the first planting; the third planting, what is standing, will average two feet; the last planting is fully as good and all standing.

To make a plantation, the cuttings should be procured in the fall or fore part of winter, and tied in bunches and buried in the cellar, in order to have them ready in time; and the hot-bed should be put up the first of March with a good strong heat, the same as for cabbage. The bed should be kept well aired and moderately moist, and the cuttings (about three inches long) spread rather thin to make strong plants. There should be about one hundred plants under a sash of three by eight feet, and when the plants get up about a foot high, the sash should be taken off in moist or warm days, to make them strong and hardy; and about a week before setting out, cut them off four inches above the ground, which will prevent wilting in the field, and they can also be more easily handled.—Plants treated as above will be ready to set out as soon as the ground is in growing order, and will be better rooted than suckers from the nursery, and can be raised for \$1 per hundred. MARKET GARDENER. Pittsburgh, Pa.

INCREASE OF STRAWBERRY PLANTS.

The rapid increase from a single strawberry plant in the course of a few years, under favorable circumstances, can be hardly comprehended by one who has never observed this increase. There is a great difference in varieties. In rich soils, some will occasionally produce a hundred in a single year, but calling the number but thirty, the yield would be 900 at the end of the second year; 27,000 at the end of the third; 810,000 at the end of the fourth; 24,300,000 at the end of the fifth; 729,000,000 at the end of the sixth, &c. Cultivators who do not wish to pay high prices per hundred for new sorts, may soon obtain all they need by increase.

The Flower and Kitchen Garden.

Treatment of House Plants.

The wants of plants cultivated in the winter, are the same as in summer; they are heat, moisture, sun and air. Of the first they generally have too much; of the latter three they rarely have enough. They are most frequently kept in a room heated up to 70°, which is much too hot. The great majority of plants will do better until they begin to bloom, with a heat not exceeding 45° or 50°. If you have a room with windows facing the south or east, in which the temperature can be kept generally at 50°, and never fall below 40°, your plants can probably be kept in good health and condition, as far as heat is concerned.

With regard to moisture, it is more difficult to meet the wants of the plants. You may drench the roots with water, but that is not all they want. They desire a moist atmosphere, which it is impossible to give them in a room heated either with a stove or by pipes from a hot air furnace. If, however, your plant room is so situated that it receives its warmth from an adjoining room, the communication with which may be closed at pleasure, the air may be kept much moister in all moderate weather, than where they are in a stove room. Your plants will need not only water at the roots, but they will also require frequent waterings of the foliage, which is not only refreshing to them, but also serves an important purpose in removing the dust with which the leaves soon get covered, and which greatly obstructs the respiration of the plants. Those with polished leaves, such as the Orange, Myrtle, Wax plant, Pittosporum and the like, should have the leaves frequently washed with a sponge. In watering, some discretion must be used. All plants do not require the same amount. Those which are in a state of rest and consequently not growing, need but little; those which are in an active state of growth and blooming or forming flower buds, need considerable. The soil will frequently seem to be dry in spots, when in fact it is not. Nurserymen tell when the plants need water by striking the pots with the knuckles, the sound being quite different when the earth is moist, from that when dry. Water should never be allowed to stand in the saucers.

As to exposure to sun-light, the plant stand should be situated so as to receive the benefit of the whole. The plants should be as near the glass as possible. Light is the life of plants as well as of man. When grown in darkness they are invariably spindling, weak and colorless.

Air should be given freely whenever the weather is mild. The windows should be drawn down from the top, so that the cold air may not strike directly upon the plants.

It is almost needless to say that the utmost neatness should prevail in the plant-room. No dead leaves, stalks or decayed flower stems should be allowed to remain. When requisite, neatly painted wires or sticks should be used to support the stems. The pots should be washed occasionally.

There is no doubt that the trouble and care of tending plants adds greatly to our enjoyment of them. Most of those who possess spacious green-houses and gardeners to do all the labor necessary therein, take but little interest in flowers, as compared with those whose labor and time have been lovingly given to the occupation. G. B. H.

The Hubbard Squash.

The Hubbard squash has (in my opinion,) sustained its eastern reputation in the west, as an A No. 1 squash.

East Des Moines, Iowa.

S. M. DYER.

The Feejee Tomato.

The seeds of the *Feejee* tomatoes sent Mrs. Gillet of Ogdensburg, have done remarkably well, and she considers them a fine and desirable variety—being very large, the flesh being compact and firm—the color of a more cherry red than other tomatoes. She sends a few seeds from the first tomatoes that ripened. They have very few seeds. G.

The Cassabar Melon.

This melon belongs to the Cantaloupe family, and is, we think, the best we have ever met with. It grows to a large size—long in shape, frequently measuring from 16 to 20 inches in length, and corresponding in diameter.—The flesh is fine grained, tender and very juicy, and of a greenish color. The melon from which I got my first seed was 24 inches in length. It is very productive, more so than any variety I know of.

I have some of the seed of this excellent melon, and I would like to see it more generally cultivated. I will send a package of the seed to any person who wishes to give it a trial, upon the receipt of a few postage stamps to pay the postage and cost of putting up. I raise no seeds of any kind to sell, but will share any kind which I have with those who wish to give them a trial.

I have also a small amount of the Honey Cantaloupe, a very good melon, which I think ranks next to the Cassabar melon. If my supply of the first runs out, I will send a package of the latter instead of the Cassabar melon.

Curwensville, Clearfield Co., Pa.

F. A. FLEMING.

The Apple-Pie Melon.

I have raised in my garden, from *one seed*, of the Apple-Pie Melon, nine melons, weighing altogether 185 pounds—the largest one weighing 45 pounds. F. A. HOYT.

Germanstown, near Philadelphia.

I notice a communication from G. W. BROWER of Schenectady, stating that he raised several apple-pie melons “averaging 26 pounds each.” My father raised four of the melons, the largest weighing 53 pounds, the next in size 38 pounds. The other two he did not weigh.—“H. G. W.” wishes to know how to make pies and preserves—also how to determine when they are ripe. The following I take from the “American Agriculturist” for October: “When ripe, which can be known by the melon turning yellow, or the seed black, remove the seed, pare and slice the flesh in small pieces, and then stew it in water just enough to have it like stewed apples; when done, add sugar, spices, and a little acid. Tartaric acid or lemon juice, or good vinegar may be used; the latter, however, does not make as good a pie. A tablespoonful of lemon juice to four pounds of melons I think the best proportion. The quantity of sugar must be in proportion to the acid. Without the acid the pie is tasteless. Do not put the sauce in a copper vessel.”

Bridge Creek, Ohio.

REBECCA W. PEABODY.

As the Apple-pie melon question seems to be an open subject, I will tell you of our success in raising them the present season. We planted a few seeds—perhaps half a gill or more—in a row or two of sugar cane, the same as we plant pumpkins among corn. The land is a light sandy soil, and has never been manured. They sprung up and grew rapidly, and the result is half a wagon-load or more of fine large ripe melons. We weighed one the other day, which weighed 26 lbs., and many more are nearly or quite as large.

I have not yet tested them for pies, but stewed in Chinese molasses they make excellent melon-butter, or preserves.

IRENE COLE.

Flowerville, Ind

SEEDING DOWN YOUNG ORCHARDS.—The *Gardener's Monthly* is an excellent practical paper, and we are therefore surprised to see in the last number a recommendation to seed down a young orchard the next spring after planting, with orchard grass. This recommendation is the more extraordinary as it immediately follows directions for the management of dwarf pears. All we ask the editor, is to try this mode alongside the practice of keeping up a system of *broadcast* cultivation by horse labor. We have seen both ways tried so often, with such invariable and striking results, that we supposed the matter settled long ago with all intelligent cultivators.



BEDDING FOR FARM STOCK.

No farmer undertakes to winter his horses without some sort of bedding for them, either the usually abundant and inexpensive material of straw, or the more valuable refuse hay from the manger. The "hard boards" would leave too evident marks of discomfort, the labor of cleaning would be much enhanced, and some horses *would* help themselves without stint from the hay rack, if allowed to do so. Hence we need not urge particularly the importance of giving an easy resting place to this portion of the farm stock, but there is need, we think, that something be said on paying the same attention to the other tenants of the barns and yards, and also upon the best materials for the same.

This year the usual material for bedding is, in many places, demanded for more important uses. Straw and all coarse fodder will be husbanded with care, and dealt out with economy, as, indeed, they should be every winter.—But we need not therefore give no bedding to our cattle—our oxen, cows and calves—nor should our sheep be left without a dry, soft spot to lie upon—or our pigs be refused a nest into which they can crowd for warmth and comfort.

The woods, with their abundant crop of *leaves*, will supply a most excellent material for these purposes. If gathered while dry, and stored under shelter, they will furnish soft bedding for any animal, and add also largely to the value of manure. Leaves absorb a considerable amount of liquid and decay quickly from exposure, and the quality of the fertilizing matters they supply is superior to most other materials used for bedding.

Anything which promotes the comfort and quiet of our farm stock, promotes also its thrift and productiveness.—A horse or ox is in better condition for labor the next day after passing an undisturbed night's rest upon an easy bed, than if forced to stand or lie in discomfort—a cow will give more milk, a fattening animal will take on more flesh; and all upon less food than would otherwise be required.

Leaves in the country are abundant and easily secured. In towns, dry sawdust, chips and shavings from laths and planing mills, spent tan-bark, dry muck, and the like may often be obtained more economically than straw or coarse hay. And to any one near a sawmill or tanyard, the sawdust and tan-bark furnish valuable material both for bedding and manure. We hope these or leaves, or all of them, will be gathered and stored by every farmer who has not an abundance of straw to give every animal in his stables or sheds a warm, dry bed through winter. He will be doubly paid, first in the comfort and thrift of his stock, and again in increased crops from the additional supply of manure.

WINTERING CALVES.

EDS. CULTIVATOR—Every year I have four or five calves to winter, and every year I have to make "a talk" about it in some one of my agricultural papers. You once told my story for me (Co. GENT., Jan. 14, '58;) this time I shall try to tell it for myself, though I don't expect to do

it any better, but I hope I have learned something since that time.

There are too many farmers who think it too much trouble to give calves any extra attention, but let them "take their chance" with the other stock through the winter. This proves a very poor chance, to my notion, for farmers who will treat calves so negligently will take very little care for the comfort of any tenant of their barn-yard. Calves, I have thought, which "take their chances," are of the same breed with those which furnish crows with bait and tanners with kip-skins in spring-time. If they survive the winter, it takes them all summer to get ready to grow again—then, if tough enough, they will stand another winter and take their place with the raw-boned, poor-milker cows, or lank, unruly steers, which are the pests of our highways and the disgrace of our stock husbandry.

A trifling amount of attention will produce a very different result. There is no need that calves stop growing in winter, nor need they be fed expensively to keep them in good thrift.

My calves have, as their winter quarters, a stable or room in the barn, about twelve feet square, with a manger along one side of it, next the barn-floor. This manger holds all I put into it, until the calves have eaten it, or I take it out—hence there is no waste. The front has V shaped openings for them to put their heads through, of a size appropriate to calves. The bottom of the manger is about six inches above the floor—a board slants to the back of the manger from about one foot from the front, so that the feed will slide forward within their reach. The front openings come within six inches of the manger bottom and extend up nearly three feet, and are about twenty inches wide at the top.

Nothing in the fodder line that I ever put before a calf, seems to "take" better than good, early cut, and well, but not over-cured clover hay. They will do well on it without anything else, but will do better with an occasional feeding of apples, pumpkins or roots, cut fine and well salted, "just for a change"—they then return to hay with a renewed appetite, and evince by their playfulness that they "feel first-rate," and by their looks, that they are thriving and growing. I like to have my calves and other stock with coats as sleek and shiny in winter as in summer, and with comfortable shelter and care, it is not difficult to secure this satisfactory appearance.

This year hay is rather scarce with me, but my calves shall not be starved down if there is any virtue in corn meal and cut straw to prevent it. So far they take hold of barley straw with good relish; pumpkins do not seem to come amiss, and a "nubbin" of soft corn occasionally seems a sweet morsel. Why cannot they make their nightly meal of straw, with a few ears of corn to give "heart" to their evening's rumination? I have seen it somewhere stated that corn fed to cattle at night would be as well digested as though ground into meal, being fully chewed in "the cud" before morning.

To thrive, calves must have water at least twice a day, and if they can have it close at hand, and whenever they like, all the better. The best I can do, is to water them night and morning, letting them take a little excursion of some six or eight rods to get their drink. It seems "tough" to them, no doubt, to leave their warm stables on a blustering day for a drink of cold water, and I should like to be able to build a great cistern to hold the water from the barn-roof, so that I could pump it up right before them and all my stock, three or four times a day at least.

Calves may be stabled and fed and watered, and yet suffer from want of cleanliness, and a good bed of litter to lie upon. I have always given the latter, and cleaned the stable three or four times a week, but this winter I shall clean out every day, and give all the bedding I can spare for them. No, I don't doubt but some will do better for their calves, but many will do worse—so it may do some good to give my reminder for those who need its promptings. Perhaps some brother farmer can give me some valuable hints on the subject, if they would only take up the pen and do it. FARMER B.

ECONOMY IN FEEDING STOCK IN WINTER.

Of late years, much has been said and written (and for the main part justly too, perhaps,) upon the economy of cutting or steaming food for cattle in the winter; a course which is doubtless under certain circumstances and in some localities, highly to be recommended. But that it should be universally followed I cannot bring myself yet to conclude. One objection to this course is the great amount of labor required to cut the food for a large stock of cattle, through a winter of from four and a-half to five and a-half months. And for one I cannot see what advantage it possibly can be, if my stock both consume the food I give them without wasting, and well digest it, as they probably would if kept wholly on good bright hay.

I am aware, in advancing this theory, I am conflicting somewhat with our modern teachers in agriculture, who advise us to feed nothing without being prepared by the knife or otherwise.

And while upon this subject of stock-feeding, and as the present is the proper season for rehearsing such matters, allow me just to say that the common opinion that a stock of cattle cannot be carried through the winter without a large stock of hay—equal usually to two tons per cow, and about double that quantity for a bullock—is in my view likewise preposterous. Or in other words that hay, and hay only, is what we must have for stock-feeding in the winter months.

Suppose we just look into this matter, and "calculate," Yankee-like, as you perceive I am from a Yankee State. Farmer A. has a stock of ten cows to winter. For this purpose he must have twenty tons of good hay, taken from as many acres probably—as one ton per acre is likely a full average for our hay crop.

Now there is Farmer B. his neighbor, who believes and practices a different doctrine. He has a like number of cows, and "calculates" to carry them through on his 800 bushels of roots, taken from a single acre, (either carrots, bagas, or mangolds,) and his ten tons of choice corn fodder, raised from two acres—and I will venture the assertion that Farmer B.'s cows will give more milk and look smoother in the spring than his neighbor's, which have been fed solely on dry hay.

Now, Messrs. Editors, what say you? Is there really anything in this theory, or is it all theory and moonshine? If I did not dislike to be personal, I would just give you some statistics in support of my method. And I think it becomes some of the farmers of Western New-York to look into this matter the present season, when hay is already selling in some localities for twenty dollars per ton, and just see if there is not really some way to keep stock cheaper than feeding them wholly on hay. Probably it would be economy to feed even a proportion of meal when hay commands a price approaching one cent per pound, and meal can be had for one and a-half or two cents.

All I ask is for intelligent thinking men to look into and examine the matter, and not think that there is only just one way to do here, i. e., the very thing they have *always* done, and their ancestors before them, but to recollect that the present is truly an age of progression, and he who fails from lack of confidence, either in his own energies or in the new methods constantly being brought forward, from venturing into some of the *new-fangled theories*, as he may in derision call them, must just be content to be a laggard in his age.

WM. J. PETTEE.

Salisbury, Conn.

WINTERING STOCK ON STRAW AND CORN-STALKS.

In a very sensible article on stock feeding, WM. J. PETTEE suggests that there are other ways of keeping cattle through the winter, besides feeding them on hay. It may, perhaps, be news to him and other New-England stock-growers, to learn that many "Farmers of Western New-York" have been for years in the habit of wintering their cattle with *little or no hay at all*. Last winter, I kept through fourteen head of cattle and two horses, without a mouthful of hay, except a little to my cows about the time of their dropping their calves in spring. They went into

winter in good condition, (which is very essential,) and were fed on *corn-stalks* and *straw*. Towards spring a few ears of corn, not to exceed three each per day, were given. The cows, about calving time, were messed with a few potatoes and a little barley meal, and shorts mixed in equal quantities. My stock all came through in first rate condition.

This winter I am feeding the same, with the addition of a mess of carrots each day.

A great many cattle in Western New York will be wintered on *straw alone*, with perhaps a few potatoes and a little mill feed.

What Mr. PETTEE says about the economy of feeding meal as compared with hay at the present high prices, is undoubtedly true. I certainly would prefer *straw* and *meal*, to *hay alone*. But add to these, carrots, turnips, or potatoes, and you have a combination that will keep your stock in a thriving, and if you please, a *fattening* condition.

If a man has a power straw and stalk-cutter, I think it would pay to cut his fodder. But it is a great mistake to suppose that cattle will not eat straw without cutting. If stock are tied up and fed in mangers, they will eat any kind of forage *cleaner* than if fed on the ground. The reason, I suppose, is mainly that it is not trodden under foot, and the animal being confined in one place, he is not ranging about seeking for something more palatable.

It is very common here to keep sheep through the winter on straw, with a small allowance of corn, beans, or roots. But be the feed what it may, shelter from the cold winds and storms from early autumn to late spring, is all important. If animals can have that, they will thrive on pretty short allowance. B. Batavia.

HOW SHALL WE SAVE FODDER.

The question has been asked more frequently and more earnestly during the present extraordinary scarcity, than for many past years. We hope to answer it in a way that may afford some valuable suggestions.

First—It is important that no fodder be *wasted*. It often happens with many that hay is scattered about feeding-yards, and trodden under foot by animals. It is not, perhaps, wholly lost, for it becomes converted to manure, but at the present time it is a rather prodigal mode of manufacture, and it would be decidedly more economical to pass this material first through the animal. To prevent this waste, suitable racks and boxes should be amply provided, and they will, in a very short time, pay their cost. Several good modes of constructing them will be found in past numbers of the Illustrated Annual Register.

Secondly—Use for food all the *straw* that can be spared. If well stacked and preserved, as nearly the whole straw crop has been the present season, it will be eaten freely, especially if a slight sprinkling of brine be added, or if cut short and mixed with meal. "But we want straw for littering our stables!" True—it is important that animals should be comfortably bedded; and it often happens where this is omitted, that more is lost by cold and discomfort, than is gained by feeding the straw. There is, however, a substitute which many farmers may still procure in the form of *forest leaves*. These constitute an admirable material for bedding animals, being softer as well as warmer than straw. During the open weather which frequently prevails in the early part of winter, they may be secured in large quantities. Select those places in the woods where the winds have swept masses together, as in hollows or along the side of fences. They may be thrown into a wagon provided with a large box, by means of a two-bushel basket, and many loads drawn in a single day.

Thirdly—Make the most of cornstalks. As commonly fed, more than half their value is wasted. The leaves are

stripped off by cattle, and the solid stalks, which constitute the greatest portion, are trodden under foot. Every part should be eaten; and by doing so, one acre's product will go farther than two acres with the common wasteful mode. They must be cut fine by means of hore power.—Hay cutters, which chop in pieces an inch long, will not answer. The fourth of an inch is quite long enough.—One farmer of our acquaintance, who kept a four-horse power at his barn, has made a large saving by cutting all his cattle fodder in this way. The machine was set so as to cut very short, and the hardest stalks were reduced to a state like fine chaff; and all was eaten. Two or three hours with the machine would cut enough to last his head of thirty cattle a week. This mode of treating stalks we have found absolutely necessary in feeding the Chinese sugar cane in winter, when it becomes so hard that cattle cannot grind it. We have found great advantage in preparing it by the use of Hickok's cutter and crusher, which cuts at first half an inch long, and afterwards crushes or grinds the cut material. It would be better if cut shorter. Two-horse power will drive it with great rapidity.

Fourthly—A great saving may be effected by shelter and warmth. Cattle exposed to winds and storms must either eat large quantities to maintain animal heat alone, or else inevitably waste in flesh. Comfortable sheds, (if only temporary,) well littered, and warm stables, will save tons of fodder in a winter on every large farm, and hundreds of dollars such a season for high prices as the present one.

COOKING FOOD FOR HOGS.

A correspondent who signs himself "Massachusetts," and "farms in a small way," wishes some information relative to the best method of cooking grain for fattening hogs. He keeps but four at the present time, the food of which he cooks in a 60 gallon kettle, well set in brick, a cast iron top being placed on the brick work in which the kettle sets. But he still finds that for the four hogs, he has to cook food at least three times a week, requiring two to three hours each time, and quite a quantity of wood, which is four to six dollars per cord. He is not satisfied with this arrangement, and proposes an upright tubular steam boiler, the size of half a barrel, with the necessary pipes, cocks, &c., to convey steam to a vat for cooking the meal. He remarks that such is "the vast difference in the grain when his hogs are fed with boiled, over unboiled food," that he shall keep on with his present arrangement until he finds something better. Can any of our correspondents speak from experience in this matter?*

We take it for granted that the meal must be first made wet before the steam can act upon it usefully. We would like to know the amount of saving effected by a well made steamer over the best arranged kettle for boiling, with a cover to retain as much as possible the heat of the steam. A great waste of fuel results from simply placing a kettle over a fire, the flame striking over the surface in a loose irregular manner. If, on the contrary, the brick work is so built that the flame from the small fire below is spread out thinly over the whole broad surface of the kettle, by leaving a space between the kettle and the brick, over the whole surface, only an inch or an inch and a half thick, so that the heat shall be economized as in Mott's Agricultural Furnace, a very little fuel will heat or boil a large measure of water.

* Our correspondent will find a cheap steamer described in the Illustrated Register for 1858, p. 115.

There is a singular diversity of opinion on the subject of cooking corn meal for hogs. A careful and very successful farmer once assured us that his corn yielded about two and a half to three times as much pork with the meal ground and cooked, as fed in the ear. What relative part was due to the grinding and cooking respectively, he had not determined. Other farmers have placed the result far lower, and assert that it does not nearly double the value of the grain. We want something more careful and more frequently repeated under varying influences to settle the question.

In preparing ground food by cooking or otherwise, much dilution with water is very undesirable. Large, compact, excellent pork can be made only by feeding the animals on concentrated food. One of the most successful pork raisers on a small scale, feeds his spring pigs on sour milk through the season, and frequently by winter has animals weighing between three and four hundred pounds; but he is especially careful not to allow any slop to be thrown into the sour milk, or in any other way to dilute it. Hogs fed on dry *ground* meal, are observed to be of compact handsome form; while such as get abundant *slops* with a small portion of meal mixed through it, have large bellies and slenderer flesh. We believe this consideration has been too much overlooked in feeding, and hope these desultory hints will call attention to it.

FEEDING SHEEP—LOSS OF WOOL IN SPRING.

We recently remarked at some length on the management of sheep in fall and early winter, but have since come across an additional hint in the following statement credited to the *Michigan Farmer*, which, if true, is worth placing before our readers. Will some of our sheep-men give us their views upon the question. We have noticed that starved sheep were apt to lose their wool in spring, but have had no experience with such in our own flock:

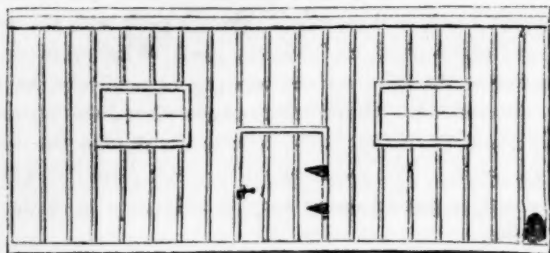
"There is no season of the year when sheep are more liable to lose nearly all they have gained, than November and December, and if they do, there is an end to the hopes of a crop of wool; for the want of food has the effect of stopping the growth of the wool, and the moment the growth is stopped, the end of the fibre is completed, a change takes place, it becomes dead, in a manner analogous to the stem of ripe fruit, and a renewal of good feed after these months, and after the growth of the wool has been once stopped only prepares the skin to send forth a new growth, that pushes off the old fleece, and causes it to be lost before shearing time."

STORING CABBAGE FOR WINTER USE.

"Cabbages are variously stored; some prefer setting the head downward and the root up, and covering partially with dry soil. Others keep in the cellar, which must be well aired." So says a writer in Co. Gent. of Oct. 6th.—In the autumn of 1857, I packed a barrel and a Havana sugar-box full of cabbage heads and white moss, and then placed them in a warm cellar. The cabbages kept sound and good into March, when some of them began to decay; however, a portion of them kept well into late in April.

Last autumn I again packed my cabbages in moss, such as is used by nurserymen in packing trees, &c. These were kept in my barn until partially frozen, and then the box and barrels were covered with straw, and kept in a slightly frozen state till into April. Any time when wanted for use they were come-at-able, and by immersing the heads in a bucket of water, the frost would be entirely removed in course of an hour or two, and the cabbage were fresh and crisp as when packed. I find this a far preferable way of keeping cabbages to that of setting them out in my warm, damp cellar, where they are liable to decay, and give off a very offensive odor. If buried head downwards out-doors, they cannot be conveniently got at till spring. L. B.

The Poulterer's Companion.



CHEAP POULTRY HOUSE.

The above rough sketch is intended to represent the front elevation of a *Poultry House* I have just erected for the accommodation of one hundred fowls. The dimensions are as follows, to wit: Twenty-four feet long by twelve wide—9½ high in front, and 6½ in rear, to afford sufficient slope of roof to easily shed water. Architects would call it a lean-to, if attached to a dwelling or other building. The material is pine, inch stuff, batoned all around, the boards being put perpendicularly, and fastened to a plate and sill of 2 by 3 scantling, which runs across front, rear and both ends. The roof is made of inch boards a foot wide, the cracks being covered with thin sheathing 6 inches in width, and is supported in the center by a 2 by 3 scantling, the entire length of the house. In the front are two windows hung on moveable butts, and open in—door in the center, and a hole for fowls at the right hand corner, with slide inside to shut at night.

The house is divided into three apartments of 8 feet each—the center being the feeding room, into which you enter as you open the door. This room has a floor, and contains a box 24 by 18 inches, and 5 inches deep, filled with slacked lime—another filled with sand—another filled with pounded oyster shells—also a feeding hopper for grain, 8 feet long, two feet wide, and two feet high, with two fronts, so that fowls may eat from both sides at the same time—capacity about three bushels. Both faces or sides are covered with slats three inches apart, so as to prevent fowls from getting in with their feet. This hopper is filled as often as consumed, so that the fowls can have access to food at all times. Another box, covered with lath, (an old starch box I use,) is used for cooked vegetables and meat. Last comes the old-fashioned barrel fountain, which furnishes constant supply of water, *clean*, because the basin under the barrel, into which the tube extends is too small to allow the fowls to put in their feet. This list embraces nearly all the furniture of the feeding room.

The right end of the house of 8 feet, is devoted to the sleeping or roosting apartment. My roosts are now of oak poles, (shall be sassafras soon as I can get them from St. Louis,) and are placed about six feet from the ground, at right angles to each other, about 16 inches apart, and nailed together—giving more roosting room in the same space than roosts placed across a room but one way. The fowls gain the roosts by wide ladders. This room has a ventilator in the roof and in the end of the building.

The left end of the house of 8 feet, is separated from the rest of the building by a partition and door, and contains three tiers of nests, fixed around the sides of the room. Some are 18 inches square, while those upon the floor tier are 20 inches square. A board six inches wide, runs in front of all the nests, and on a level with this board, a 6 inch ledge runs around likewise, so that biddy may make a choice of nests. In the front of the nests I have nailed up a few cornstalks for concealment the more easily. The upper tier of nests is covered with a slanting roof, which will prevent fowls from stealing a quiet roosting place. This room has a ventilator in roof and rear.—I put up permanent nests, because it was the easiest and cheapest way, and scalding water and lime-wash will keep them perfectly free from insects of all kinds.

I intend another year, to adopt the pure breed system, and cultivate one kind of breed exclusively. I have now

eighty fowls of various breeds, embracing Brahmas, Shanghai, Game, Creeper, Top-knot, and Grades, besides Aylesbury and Rouen and Common Ducks, Top-knot Ducks, Common Geese and Turkeys, and African Geese. My poultry yard is about 50 feet by 40 feet. The house is on west side next the cow-house. A tight board fence, 7 feet high, on west and north sides, and lath fence same height on east and south. In front of my house there is a common containing some eighty acres, which makes a capital pasture for my cows and geese. W. A.

Davenport, Iowa.

The Dairy Department.

FLINT'S "MILCH COWS & DAIRY FARMING."

Winter Feed of Cows.

MESSRS. EDS.—In a former letter on "Butter-Making in Winter," I proposed to remark further on various interesting points brought out in the work named above, and will now proceed to do so. I have no misgivings as to the value of my text, but must confess to some fears in regard to my comments thereon.

The chapter on "Feeding and Management," contains many valuable suggestions. The anecdote of the German farmer shows clearly the importance of *feeding well*, in order to make dairying profitable. A Swiss dairyman bought the milk of his cows at a fixed price my measure, the German furnishing ample feed, but leaving their entire care to the dairyman. He soon had to sell one-half his cows, he says, "because the Swiss required nearly double the quantity of fodder which the cows had previously had"—more in fact than the farm was able to supply. He had formerly fed them better than usual; but the increased amount now consumed astonished him—as also did the result. He says, "The quantity of milk kept increasing, and it reached the highest point when the cows attained the condition of the fat kine of Pharaoh's dream. The quantity of milk became double, triple, and even quadruple, what it had been before—a hundred pounds of hay produced three times more milk than it had produced with my old mode of feeding."

The dairyman's motto, "*keep the cows constantly in good condition*," is truly "the great secret of success."—Owing to the better quality of fodder, and greater care in feeding this winter, our cows have kept in as good condition as during the summer, and the falling off in the product of butter has been much less than usual with the advance of winter. Butter-making at this season has not been a special object with me, but I have wintered cows, and experimented a little on the subject, and I find that cows fed fully and regularly with frequent changes of food, and comfortably sheltered, will give milk as long as is desirable, taking the spring's calf and next summer's milk product into consideration.

"In winter," says our author, "the best food for cows in milk, will be good sweet meadow hay, a part of which should be cut and moistened with water, as all inferior hay or straw should be, with an addition of root-crops—such as turnips, carrots, parsnips, potatoes, mangold wurtzel, with shorts, oil-cake, Indian meal or bean meal. * * Hay cut and thoroughly moistened, becomes more succulent and nutritious, and partakes more of the nature of green grass."

Good hay, early cut and well cured, is no doubt "the best food for cows in milk," and roots "cannot be too highly recommended, *especially to those who desire to obtain the largest quantity*;" but for *quality*, give me the hay and shorts, and roots enough for three feedings a week, and I ask nothing better, nor will I promise to use the hay cutter. As to "thoroughly moistened" hay, why is it that hay thoroughly moistened by a shower, is refused by stock until it again becomes dry, or they are starved into eating it? A slight wetting, when one mixes meal with cut hay or straw, is beneficial, and indeed requisite to their consuming the whole.

The concluding directions are worth copying: "Feed sweet and nutritious food therefore, regularly, frequently,

and in small quantities, and change it often, and the best results may be confidently expected. If the cows are not in milk, but are to come in in the spring, the difference in feeding should be rather in the quantity than in the quality, if the highest yield is to be expected from them the coming season. * * The main point is to keep the animal in a healthy, thriving condition, and not to suffer her to fail in flesh; and with this object, some change and variety in food is highly important."

Prof. Flint says nothing of corn-stalks as a winter food for cows, but those who have fed them in connection with hay and roots, know how to estimate their value. In common with many others, I have observed that cows give more milk, and the butter retains its yellow color much later, when corn-fodder is fed, and comes sooner in churning, and is of a better quality. No doubt this arises from the sweetness of the corn-stalk. Roots, if fed freely, make the milk watery and thin, and hay not of the best kind, causes a decrease in quantity and quality. With good hay, corn-stalks well cured and saved, roots, apples, and wheat-shorts, one can give that "change and variety" so essential to keep the cow in a healthy, thriving condition. A neighbor, keeping but one cow, and feeding corn-stalks and shorts, is now making ten pounds of butter per week—more than some make from five cows under common treatment, at this season.

If this proves printworthy, I shall offer some remarks on other matters contained in the work before us—as yet, I have touched but a single chapter. A YOUNG FARMER.

The Bee-Keeper's Department.

Degeneration of Bees.

Articles occasionally appear in the agricultural journals, upon the "Degeneration of Bees." Some writers attribute this want of continued success to breeding in-and-in, and advise changing stocks with neighbors. Others state that swarms from old stocks have become so dwarfed that they lack strength, energy, and numbers to secure sufficient store to maintain themselves, and consequently must perish, and also affirm that this degeneration goes on with almost mathematical regularity from generation to generation.

An examination of the natural history of the bee makes one receive the foregoing with much doubt.

First—As to breeding in-and-in. In most thinly settled parts of the country, and where few bees are kept, there are generally wild bees enough to prevent, with considerable certainty, in-and-in breeding. Where many bees are kept there can be no danger of degeneration from this cause. Those persons who take enough interest in their bees to change stocks with neighbors to improve the breed, will undoubtedly give their bees all the attention necessary to success, and they would, I think, succeed just as well without troubling themselves about ill effects of in-and-in breeding.

Secondly—Dwarfed bees can only be produced from old brood comb, the cells being smaller from the number of cocoons contained. However much dwarfed a new swarm from an old stock may be, unless they, in building new comb, build it of reduced dimensions, the offspring of their queen will be full size. I have never seen it mentioned that any one ever saw a *new comb of reduced sized cells, or a dwarfed queen*. Dwarfed queens are not produced. It is almost positively certain that only one queen is ever produced from a cell. After the queen is hatched the cell is almost entirely destroyed. After the swarming season, only a trace of queen's cells can be found, so that we can reasonably conclude that the young queens, hatched the following season, emerge from newly formed cells. The queen is impregnated out of the hive, so that dwarfed drones from her hive are not likely to injure the race. Superior strength probably rules with bees as much as with animals. We may conclude that dwarfage comes entirely from very old hives, and that with the death of the bees that have swarmed from an old stock, ends the dwarfs in the new hive.

The treatment of weak swarms, whether from old dwarfed or young stocks, has often been given in the Co. Gent. and Cultivator, and it is an important question in bee culture. A weak colony made strong by proper management, is just as good as a colony originally strong. E. R.

Inquiries and Answers.

DRAIN TILE.—I wish to say something to you on the subject of draining by round tile, &c. The agricultural works have much to say about tile draining, round tile, and all this thing, but never have enlightened us at all as to how lateral surface drainage gets into the broad side of a tubular pipe of 2 inches or any other diameter. I can easily see how a tubular pipe could drain a pond, or send water from a higher to a lower level; but how surface drainage or water can get laterally into a tubular pipe of one-quarter to one-half a mile long, sufficiently to drain the land on each side of the pipe, is more than we "suckers" are able at present to see. I hope you will be good enough to enlighten us on this subject through the Co. GENTLEMAN. Your contributors and correspondents in general are not explicit enough, often leaving us in the dark on the most essential points. A SUBSCRIBER.—*Alton, Illinois.* [The water finds its way into the crevices between the separate tiles, and this far more rapidly and completely than can be conceived before trial. In order to prevent the earth also from washing in, it is often necessary to place straw, sods, &c., over the ends of the tile; and hence it has been sometimes remarked that the more you try to *keep the water out*, the surer it will be to come in freely, and your drain to work well and permanently.]

FRUITS FOR MARKET.—I am somewhat engaged in the fruit business. Will you please inform me of a few of the best sorts of apples, pears, and grapes for market use, and best adapted to our locality, between the Seneca and Cayuga lakes in Ovid? As we have the State Ag. College located in this town, and the State premium farm of 1856, we ought to be improving some. G. D. *Sheldrake, N. Y.* [We can best answer the inquiry in relation to APPLES by quoting the vote taken on this subject at the Fruit Growers' meeting at Rochester last winter. The following is the list, those being placed first, which received the largest vote: Baldwin, Rhode Island Greening, Roxbury Russet, Tompkins County King, Northern Spy, Twenty Ounce, Tallman Sweeting, Fall Pippin, Esopus Spitzenberg, Lowell, Golden Russet, Red Astrachan, &c. The Baldwin received double the vote of the Greening; the Greening double the Roxbury Russet; the Roxbury Russet double the Northern Spy; the Northern Spy double the Fall Pippin, &c. The best pears for market are Angouleme, Louise Bonne of Jersey, Beurre d'Anjou, Winkfield and Easter Beurre, *on quince*; and Bartlett, Flemish Beauty, Sheldon, Seckel and Lawrence, *on pear*. The Virgalieu would stand first, but for its liability to crack. The Isabella, so far is the best market GRAPE.—Time only will prove the value of the Concord, Delaware and Diana—grapes of high promise.]

RAISINS AND GRAPES.—Can raisins be made from any of our native grapes, and if so, of what variety? Also please state exactly how it is to be done in detail. Where can I procure a two-year-old vine (not forced) of the Anna, Clara and Powell? AN AMATEUR. *Philadelphia.* [Attempts have been made to manufacture raisins of American grapes, but have not as yet been very successful. The Clara and Anna grapes may be had of S. MILLER of Lebanon, Lebanon Co., Pa., but we are unable to say where the Powell can be obtained—perhaps of C. P. BISSELL & Co. of Rochester, or of Dr. GRANT of Fishkill, N. Y.]

DRILLING ROCKS.—Wanted, a *labor-saving* machine for boring or drilling rocks for blasting. Any inventor or dealer having such for sale, that has been *well tried and approved*, may find a purchaser by furnishing his address to this paper. D. S.

FARM MILL.—I would make the following inquiry respecting a farm mill for grinding corn in the ear, and

other grain for feed, for farm use—said mill to be run with one of Emery & Brothers' two-horse powers—and what amount of work it will perform, and price of mill all ready for use. J. P. S. [Perhaps some of our readers can furnish us the results of their own experience in answer to the above.]

Cookery and Domestic Economy.

Buckwheat Bread.

Who loves not buckwheat pancakes, and to how many in a failure of the wheat crop, is buckwheat the staff of life? and to how many more might it be if the fact were generally known, that a most palatable bread can be made from it.

The bread is as good as the pancakes—(we say better)—far less trouble to prepare, and has no burnt grease about it to make it unwholesome.

To MAKE BUCKWHEAT BREAD OR JOHNNY CAKE.—To one quart buttermilk, add a teaspoonful of soda, and flour enough to make a thin batter—put in an egg if convenient, and bake in quick oven. Try it! F. K. PHOENIX.

Johnny Cake.

A recipe for those who, like ourselves, prefer Johnny-cake without the addition of eggs and flour. We make our pumpkin pies without those condiments, substituting a cup or two of cream.

1½ cups sweet cream.

5 cups butter-milk.

1 small tablespoonful granulated or other good sugar.

2 small teaspoonfuls saleratus and a little salt.

Add corn-meal to make a batter as stiff as can be conveniently stirred with a spoon. It should be briskly stirred, turned into a well buttered dripping-pan, and baked in a quick but not too hot oven. M. Racine, Wis.

Cough Mixture.

I will give you an excellent recipe for coughs and colds, if you think proper to insert it in your paper. It has been tried for several years, and I might say it is almost an infallible remedy.

1 tea-spoonful of Camphor, (liquid,)

1 " Lobelia, "

1 " Laudanum, "

2 table-spoonfuls of Honey or Loaf Sugar.

DOSE—1 tea-spoonful night and morning, or when the fit of coughing is very severe. MRS. J. P.

Ice Cream.

Take one quart of new milk, one pint of thick sweet cream, 3 eggs—beat thoroughly—2 tablespoons of extract of any kind you prefer—"vanilla," "lemon," or any other—some use the vanilla bean. Have the sugar powdered; add the sugar to the mixture in such a proportion as will make it sickishly sweet, as a part of it freezes out. Some put in a small quantity of arrow root or corn starch, but that is unnecessary, if you have good cream and plenty of eggs. Put the whole in a preserving kettle, with a vessel of hot water under to prevent it having a burnt taste; let it come to a scalding heat; then strain it into a freezer.—Have ice pounded, (snow is better;) put a quart of coarse salt with two of snow or ice. Mix the snow and salt well together and press around the freezer. Stir with a wooden spoon until it commences freezing around the sides; then cover, and only stir it occasionally. Put a hot towel around it to take it out; dip the towel in hot water and it will slip from the freezer easily. I hope I have made it plain for "Jennie." L.

Frosting for Cake.

Take the whites of eggs, perfectly free from the yolk, and beat it up till it will stand in shape or pile. Prepare the sugar by pounding and sifting through a fine wire sieve; add a tablespoon of arrow root or corn starch to the white

of each egg. Add the starch and as much sugar as it will receive, not allowing it to run at all; put on the cake while warm, not hot. Spread it with a knife. Set it back in the oven to dry while the oven is only warm. If this rule is followed, you can ornament the cake in any manner you please, as the icing is stiff enough to retain its form. A READER OF THE CULTIVATOR.



ALBANY, N. Y., JANUARY, 1860.

AMERICAN FARMERS AND AGRICULTURAL READING.—About a year ago a contemporary of ours, in writing of American Farmers, said that they were the most intelligent and enterprising of any on the globe. But our correspondent, JOHN JOHNSTON, whom no one will accuse of having any "book-notions," or of running off into extravagant impracticabilities, wrote to us very soon, that this was too much "like a minister of the Gospel, preaching to please sinners in order to fill the pews."

We had it in mind, at this time to say that, although it is essential to progress to maintain a constant "agitation," as it is now-a-days called, of the means which are to bring it about,—we doubt if the farmers of any other country know better what their neighbors are doing in the way of improvement, or, as a whole, read more in connection with their business, than do the farmers of the United States.—Then came to our recollection the warning voice which we have quoted above, and we turned back to the letter of our correspondent with the conclusion to think again before being betrayed into any apparent bowing down at the shrine of mammon.

"I firmly believe," continued our friend, "that no man or class of men, will cease from doing wrong and learn to do right, until they are convinced they are wrong; and my preaching rest, dung, and lime and plaster, for thirty years or nearly, is thrown aside at one sweep, when agricultural editors tell the farmers they are so intelligent and enterprising."

We must confess that whenever a comparison in any respect between the great body engaged in agriculture here and the corresponding class abroad, tempts us into a spirit of complacency, this thought will arise, "how small the number really is here—in proportion to the whole—who read with any attention the agricultural journals published for their benefit, who regard the improvements made by others with any effort to adapt them to their own wants,—least of all, who endeavor by careful thought and practical trials, to advance a step beyond their fellows, at the same time by frequent communication with them, to lend a helping hand, as JOHN JOHNSTON has so often done, toward the general good!"

But we are of that conservative school which yet adheres to the doctrine that all progression, to be real and solid, must be tolerably slow. And we think we can distinctly mark the evidences that improvement of this kind has begun and is actually going on among our farmers. We work the more earnestly and with the better cheer, on this account, to diffuse a knowledge of the necessity of this improvement, to discuss the measures by which it may best be secured, constantly to draw more and more into the ranks of those who will labor with us.

It was the remark of a careful observer and received authority on Agricultural matters—the late PHILIP PUSEY of the Royal Agricultural Society of England, that "books will not teach farming, but," added he, "if they describe the practices of the best farmers, they will make men think, and show where to learn it." More truth was never put into so few words, and JAMES CAIRD was right in selecting it for the motto of his survey of English agriculture; we could have no better, perhaps, in this periodical survey we are making, with the pens of our associates and corres-

pondents, of the Agricultural capacities and wants of every part of our land.

— The one resource on which we depend in carrying out the effort, is the co-operation of those who might so much assist us. Let them not think the cry too frequent to "fill the pews;" we shall all be the warmer and more earnest *if they are filled*, and we shall have the more among us who are able, and becoming able, to "speak in meeting," with the voice, and personally describe the operations of "the best farmness." With our New Year's greeting to every reader, we shall put therefore the question in a frank and hearty way, "What are you going to do in the month or two to come, to help us along?—Haven't you one or two, or a score, or more of neighbors to bring to our mutual assistance? Have you not been doing something on your farm during the past season, the narrative of which, written out for our columns these long winter evenings, would be sure to interest or instruct some part or perhaps the whole of our already extensive company?"

—"Messrs. Editors," writes a subscriber from Western New York under date of Dec. 9th, "I have received your paper (THE COUNTRY GENTLEMAN) for several years, and have made money by so doing; and I am endeavoring to show our farmers that the mind, upon which all these facts and suggestions are bestowed at a loss when only the price of subscription is at stake, must be a barren mind indeed."

[See "SPECIAL NOTICES" on Last Page.]

LECTURES NEXT MONTH AT NEW-HAVEN.—In our November number we referred to the project, then under way, to devote the month of February to a series of eighty or a hundred lectures on Agricultural and Horticultural topics. The price for the series is only \$10, and it will, undoubtedly, be the best opportunity for discussion and the acquisition of useful information ever offered to our farmers and their sons. We remark with gratification, the expressions of approval already elicited for the design wherever it has been made known; neither those who go to teach, nor those who go to be taught, are likely to come away without receiving some benefit from mutual contact as well as from the knowledge communicated. The following is a brief schedule of the general subjects, with the names of those who have undertaken their treatment:

FIRST WEEK—SCIENCE IN ITS RELATIONS TO AGRICULTURE.

Chemistry,	Prof. S. W. JOHNSON.
Meteorology,	Prof. B. SILLIMAN, Jr.
Entomology,	Dr. ASA FITCH.
Vegetable Physiology,	DANIEL C. EATON, Esq.

SECOND WEEK—HORTICULTURE.

Pomology in general,	Hon. M. P. WILDER.
Grapes,	Dr. C. W. GRANT.
Berries,	R. G. PARDEE, Esq.
Fruit Trees,	P. BARRY, Esq.
Fruits as Farm Crops,	LEWIS F. ALLEN, Esq.
Agricultural Chemistry,	Prof. S. W. JOHNSON.

THIRD WEEK—AGRICULTURE PROPER.

Drainage,	Hon. HENRY F. FRENCH.
Grasses and Irrigation,	J. STANTON GOULD, Esq.
Cereals,	JOSEPH HARRIS, Esq.
Hops, Tobacco, &c.,	Prof. WM. H. BREWER.
Cultivation of Light Soils,	LEVI BARTLETT, Esq.
English Agriculture,	LUTHER H. TUCKER, Esq.
Agricultural Statistics,	Prof. JOHN A. PORTER.

FOURTH WEEK—DOMESTIC ANIMALS.

Principles of Stock Breeding,	Hon. CASSIUS M. CLAY.
Stock Breeding in U. S.,	LEWIS F. ALLEN, Esq.
Breeding for the Dairy,	CHAS. L. FLINT, Esq.
Horses,	SANFORD HOWARD, Esq.
Root Crops & Sheep Husbandry,	THEO. S. GOLD, Esq.
Pisciculture,	Dr. J. C. COMSTOCK.
Rural Economy,	DONALD G. MITCHELL, Esq.

Many other experienced Agriculturists and Horticulturists, besides those included in the list of lecturers, will be present and take part in the discussions, which will form an important feature of the course.

The number of lectures on the above subjects, will average three lectures to each subject. The Course will commence Feb. 1. For a detailed programme, including subjects not above specified, application may be made to Prof. JOHN A. PORTER, New Haven, Ct.

LIVE STOCK FOR CALIFORNIA.—Mr. E. FRISBIE of Valjejo, sailed for California on the 5th ult., taking with him two breeding mares—one by Consternation from a Morgan

mare, bought of Mr. Wm. Adams of Salina, and the other of Mr. E. H. Murdock of Port Byron—one Short-Horn and two bull calves, and pairs of Essex and Suffolk pigs, from Wm. Hurst of this city, and four Leicester sheep from the flock of Jurian Winne of Bethlehem.

THE ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS.—Not only every farmer, but every person who has a garden, and even those who have only a rod square of ground to cultivate, should have this beautiful work. It is a wonder to us how the publishers can get up such a book for "twenty-five cents." Why it's worth a "quarter" to just look through it and see the engravings. Let me urge *every one of your subscribers* to send you twenty-five cents, and get a copy of the book, and then try and see how many they can sell. F. F.

It may be stated by way of comment upon the above, that Fifty Dollars were paid by the Publishers of the REGISTER for one article and the twenty-five drawings accompanying it, and One Hundred and Fifteen Dollars more for the Engraving of the latter—the whole occupying *only Twelve Pages!* "TUCKER'S AMERICAN REGISTER," says the London *Mark Lane Express*, is "carefully edited, nicely printed and profusely ornamented with wood engravings."

THE STATE BOARD OF AGRICULTURE OF OHIO.—Extract from a letter dated Columbus, O., Dec. 12: We have just closed a harmonious session of the State Board and State Society, of three days continuance. We have concluded not to locate our Fair permanently, nor even to hold it two successive years in the same place. The new State Board consists of the following gentlemen:

ALEX. WADDLE, So. Charleston, Clark Co., President.
Hon. T. C. Jones, Delaware, Recording Secretary.
John Reber, Lancaster, Treasurer.
N. S. Townshend, Avon, Lorain County.
J. M. Trimble, Hillsboro.
J. M. Millikin, Hamilton.
D. E. Gardener, Toledo.
William De Witt, Cleveland.
H. B. Perkins, Warren, Trumbull County.
C. W. Potwin, Zanesville.
J. H. Klippart, Columbus, Ohio, Corresponding Secretary.

WOOD & HURLBURT'S ENGINES RECEIVE A PRIZE.—At the last meeting of the Executive Committee of the State Agricultural Society, a special committee of well qualified mechanicians, of which Ira Jagger was Chairman, reported favorably of Wood & Hurlburt's portable farm engines, on exhibition at the late Fair—as performing well, with excellent furnace arrangements, rendering them, as respects danger from fire, and in all respects, good safe engines for light purposes: a Silver Medal awarded.

USEFULNESS OF COAL TAR.—Every gardener should have a supply of gas tar—it has many uses. In the first place, nothing will destroy orchard caterpillars so instantly as the touch of a swab dipped in this substance—the slightest dab will finish them. In the next place it is the best preservative of wood wherever exposed to air and moisture. The inner surfaces of the boxes of barrows and hand carts, if coated with two or three applications of hot gas tar, will last indefinitely, so far as decay is concerned. The lower ends of bean poles, moveable frames, stakes for plants, trellises, &c., treated in the same way, will last a long time. It is incomparably better than paint. Care must be taken in heating it not to set it on fire, or a conflagration may be the result. The best time to apply it is when the wood is very dry, and is warmed by the summer sun, the pores or cracks being open, will absorb it effectually. This time of year, however, when there is no hot sun, the same result is attained for all small articles by warming them for some time near or under a stove.

SOUTH-DOWN SHEEP FOR TEXAS.—GEORGE HARTSHORNE, Rahway, N. J., shipped last week, for Calhoun Co., Texas, 15 South-Down Bucks. This is the third shipment Mr. Hartshorne has made within the last 12 months. The sheep have done well, and are very much valued, and no doubt exists as to their value in crossing with the Mexican sheep of that section.

QUEEN'S SEEDSMEN.
PETER LAWSON & SON,
Edinburgh, 1 George IV. Bridge.

LONDON, 27 St. George St., Westminster, S. W.
On account of the numerous applications which have been made to PETER LAWSON & SON, to send their List of Seeds and Nursery Produce to the United States and Canada, they beg leave to inform the Trade in America, that they are prepared to furnish them with

Price Lists,

and to assure them that any orders they may be favored with will receive their best attention.

All Orders must be accompanied by CASH, or satisfactory references in England. Dec. 22—w&mt.

MIAMI BLACK RASPBERRY.

Unsurpassed in its merits as a Berry for Garden or Market Culture. A very superior sort. Plants supplied, in small or large quantities, at low rates.

C. B. MURRAY, Little Miami Nurseries, Foster's Crossing, Warren County, Ohio.
Dec. 22—mlt—wew&f.

RASPBERRY PLANTS AND SEEDLING POTATOES.

FOR SALE—10,000 HUDSON RIVER ANTWERP RASPBERRY PLANTS, at \$20 per 1000—\$2.50 per 100.—Also 100 barrels "STUDLEY SEEDLING POTATOES"—a very early kind, not subject to the potato rot—fall price \$2 per barrel.

Address S. V. C. VAN RENSSELAER, Claverack, Columbia Co., N. Y.
Nov. 10—w&mt.

GREAT CURIOSITY.—Particulars sent

free. Agents wanted. SHAW & CLARK, Biddeford, Me.
Dec. 8—w&mt.

FOR SALE.—The Thorough-Bred Durham

Bull "OZARK," 1985, Three Years Old in October—price \$150. Also 4 pair BERKSHIRE PIGS, 3 months old, 2 Boars and 2 Sows—price \$8 each, boxed, &c. Address THOS. GOULD, Aurora, Cayuga Co., N. Y.
Dec. 22—w&mt.

DURHAM STOCK FOR SALE,

at reduced prices. Having made arrangements to rent my farm, I will sell my Stock of Durhams, consisting of Eleven Cows, six Heifers, from four to thirty months old, and ten bulls from two months to four years old, at greatly reduced rates.

GEORGE G. LOBDELL, Wilmington, Del.
Dec. 15—tf.

EXCELSIOR AGRICULTURAL WORKS,
Albany, N. Y.

CHARLES E. PEASE, Proprietor,

(Successor to RICHARD H. PEASE.)

Farmers and Dealers in Agricultural Machines will find it to their interest to patronize this establishment, where they can be supplied with the very best

Endless Chain Horse Powers,

for one or two horses; Lever or Sweep Horse Powers; Improved Threshers and Separators and Cleaners; Circular Saw Mills for cord wood; Cross Cut Saw Mills for cross cutting lumber; Krauser's Patent and Philo's Cider Mills; Corn Shellers; Clover Hullers; Dog Powers for churning, &c., &c.; Hay Cutters, Wilson's Patent, &c.

Manufacturing none but the most approved Implements that have been thoroughly and practically tested, I am enabled to give a most liberal warranty on all my implements, knowing that they cannot but work as represented. I have just received the first premium at the NEW-YORK STATE FAIR, held here October 4 to 7th, for the best, most durable, useful and cheapest

Agricultural Machines

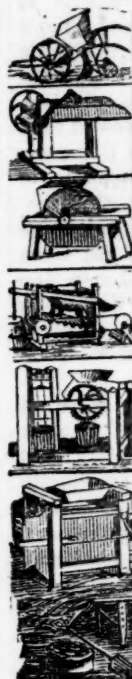
on exhibition. Orders will receive prompt attention, and Circulars sent gratis on application. Address

CHARLES E. PEASE,

Excelsior Ag. Works,

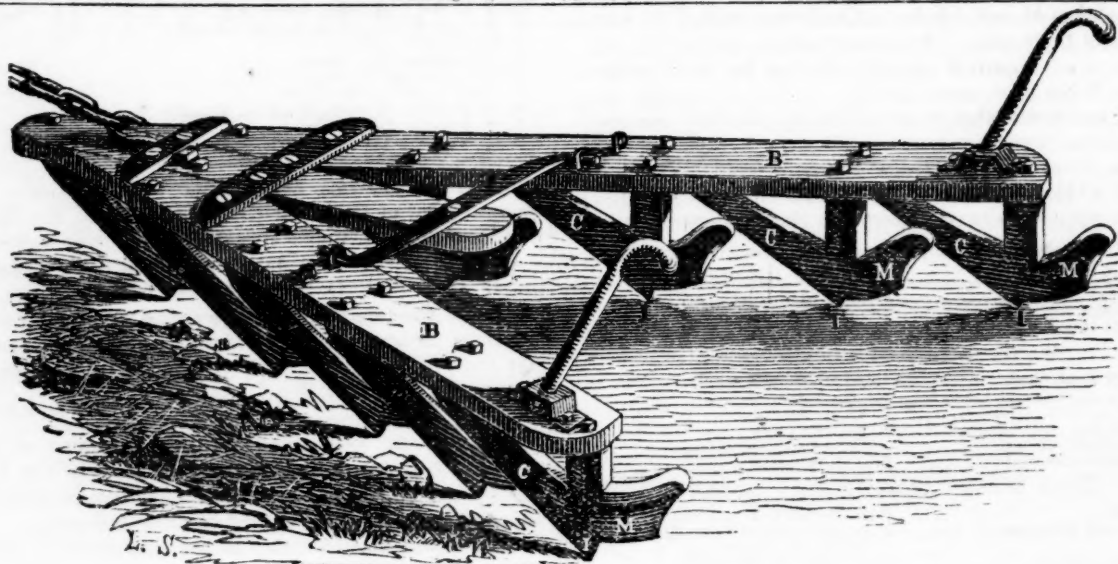
Albany, N. Y.

Jan. 1, 1860.



DOWNING'S FRUIT AND FRUIT TREES.

Just Published, and for Sale at this Office—sent by mail, post-paid, at \$1.75.



**SHARES' PATENT
COULTER HARROW, PULVERIZER,
AND GRAIN COVERER.**

BELOW is a Notice by J. J. THOMAS, Esq., published Editorially in the COUNTRY GENTLEMAN of April 28, 1859, of the above named machine:

"SHARES' HARROW.—We have given a full and practical trial to SHARES' HARROW, received from PEASE & EGGLESTON, of this city. It proves to be an admirable implement for its intended purpose. It completely pulverizes the surface of inverted sod, effecting this at least three times as deep as the same is performed by the common harrow. Besides this, it possesses one great advantage over the common harrow as well as over the gang plow, in that it does not tear up the sod or bring up the grass. This advantage results from the peculiar form of each tooth, which at first presses the sod down like a sled-runner—then cuts it in the direction of motion—then throws the earth sideways like the mould-board of a plow. The inventor of this tooth has shown much ingenuity in thus combining in the proper order these three offices.

The form of the harrow is neat and perfect. Its three bars are folded snugly together for conveyance, and opened again for use, and firmly braced, with almost a single motion of the hand.

We tried this harrow side by side with a common, nearly new, and well made double square or Scotch harrow. The Shares harrow pulverized more efficiently and more than twice as deep, at twice passing, as the square one at four times.

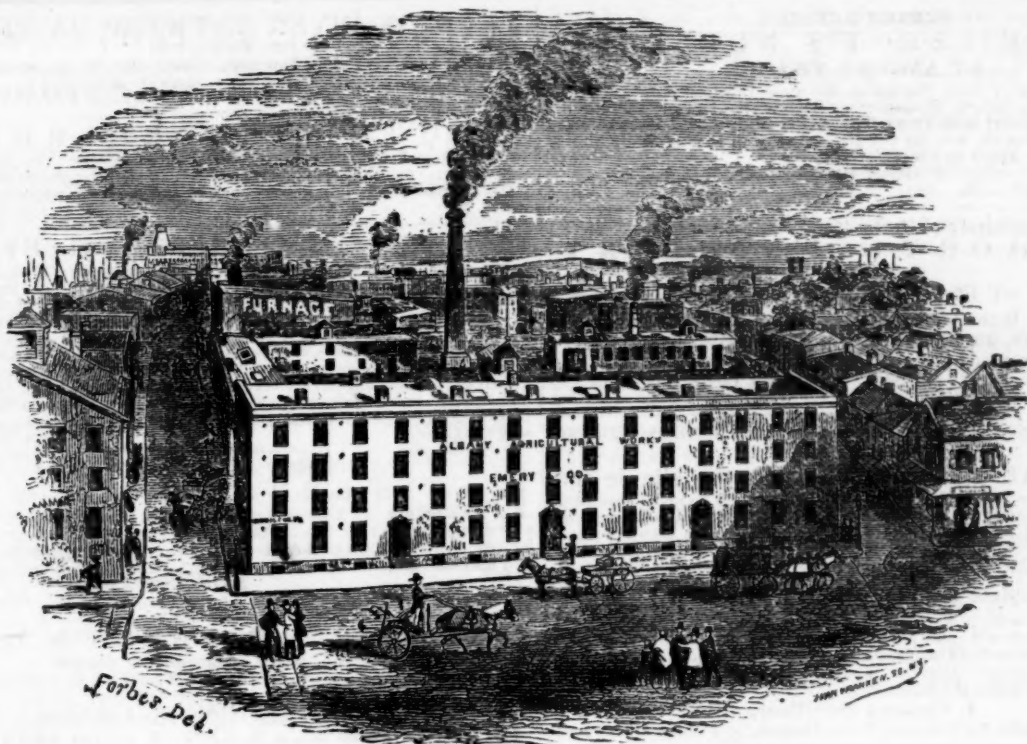
Every man who cultivates a farm of any considerable size, especially if the soil be strong or adhesive, would certainly pay for this harrow in one year by the work it would enable him to perform. Nothing can exceed it in preparing inverted sod for corn or for any other crop. It would effect an admirable preparation for the gang plow, in turning under a coat of manure on the top of inverted sod; and it would prepare fall-plowed ground for sowing oats and barley early in spring, in an efficient manner. It is one of the best inventions of late years for the farmer."

This celebrated implement is manufactured by the subscriber. It weighs only 185 lbs., and the price is only \$15, delivered on cars or boat here. Farmers and Planters south, are requested to order in time for their early spring work. Catalogues gratis. Address, for further particulars,

WM. W. EGGLESTON,

Successor to Pease & Eggleston,

Dealer in all kinds of Agricultural Implements, Albany, N. Y.



EMERY BROTHERS,

PROPRIETORS OF THE

ALBANY AGRICULTURAL WORKS, IMPLEMENT AND SEED STORE, No. 62 AND 64 STATE STREET, ALBANY, N. Y.

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3. Constructing and Hinging it.

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2. Transplanting Small Trees.
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6. Select List of the Newer Pears—Dwarfs.
7. Plums—The Blackberry—Strawberries—Grapes—Insects on the Apple.
8. Sending Grafts by Mail—Root Grafting.

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5. Transplanting in Autumn and Spring.
6. Early Melons and Squashes.
7. Wool Table.
8. Cleaning Seed Wheat.
9. To Make Farming Profitable.
10. Packing Trees for Transportation.

XII. ADVERTISEMENTS.

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Jan. 1, 1860.

Special Business Notices.

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